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ABSTRACT

A project was undertaken to identify, develop, and validate those performance, program, and personal standards judged necessary to operate and evaluate a quality automobile mechanic/technician training program. Included among the project activities were the following: (1) a review of existing literature on performance and program standards; (2) development of a set of program standards and related evaluation material for on-site program review; and (3) validation of the evaluation materials in a pilot test conducted at 32 sites nationwide. These activities resulted in a number of products, including an automobile mechanic/technician training manual on program standards, an automobile mechanic/technician training program guide on evaluation, an automobile mechanic/technician self-study guide, a report of entry-level employee characteristics important to employers of automobile mechanics/technicians, a task list with performance standards, a tool list, and a structural guide for automobile mechanic/technician training programs. Recommendations called for use of the project-developed materials and procedures to assess, certify, and improve the quality of automobile mechanic/technician training programs. (Appended to the report are the above-mentioned products as well as the survey instruments and results.) (MN)

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AMTEP

Automobile Mechanic Training Evaluation Project

Final Report

July 1981

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FINAL REPORT
# of the
AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
-AMTEP-

to

MOTOR VEHICLE MANUFACTURERS ASSOCIATION OF THE UNITED STATES, INC.

JULY, 1981

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PREFACE

The research project reported herein was conducted for the Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA), by the Commission on Occupational Education Institutions (COEI) of the Southern Association of Colleges and Schools (SACS), Atlanta, Georgia. The report is in two parts; The Final Report for 1981 and the Executive Summary which is a brief statement of basic project goals and activities.

DEDICATION

This report is dedicated to the memory of Mike Appel, a former member of the Industry Planning Council. Mike was a professional automotive instructor, continuously striving to improve the quality of automobile mechanics, and the image of the occupation. Through his work on the Industry Planning Council and on this project, he helped us work toward our common goal, improvement of automobile mechanic/technician training programs.

I

INTRODUCTION

This is the final report of the Automobile Mechanic Training Evaluation Project (AMTEP). This was a project of the Commission on Occupational Education Institutions (COEI), one of the four accreditation Commissions of the Southern Association of Colleges and Schools (SACS) of Atlanta, Georgia. Project funding was provided by grants from the Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA) of Detroit, Michigan.

The project purpose was to develop standards, evaluative materials and procedures needed to certify the quality of automobile mechanic/technician training programs. This project was national in scope and involved automobile mechanics/technicians and supervisors, automobile mechanic/technician instructors, vocational education administrators, evaluators and others in a concerted effort to improve the quality of automobile mechanic/technician training programs.

Project activities were in three phases. Phase I included state-of-the-art research, initial identification of performance standards and project start up activities. Phase II and III activities included the development, validation and revision of standards and evaluation materials. Phase II included two groups of field tests at 26 sites. Phase III included six field tests and the final validation of the certification system. The standards, evaluative materials, and procedures for the self-study and team visits were developed with the assistance of four committees: The Performance Standards Committee, the Program Standards Committee, the Personal Standards Committee, and the Executive Committee.

The Performance Standards Committee identified incumbent automobile mechanic/technician tasks and performance standards in eight major areas of automobile service and repair. The Program Standards Committee identified standards, evaluative materials, and procedures to be used in the automobile mechanic/technician training program review process. The Personal Standards Committee identified attitudes, behaviors and interpersonal skills considered necessary for employment as an automobile mechanic/technician. The Executive Committee was appointed and met during Phase III, and was responsible for policy development and implementation decisions. This committee also provided major input into the final set of Program Standards.

This report summarizes activities from the starting date of the project, January 15, 1979, to June 30, 1981.

II

PURPOSE

The purpose of this project was to improve the quality of automobile service through the identification, development and validation of those performance, program, and personal standards judged necessary to operate and evaluate a quality automobile mechanic/technician training program.

The media has daily reports of "rip offs," incompetent mechanics, and general poor performance that plague the automobile service industry. This perceived inadequate performance can be linked to many causal factors; some can be controlled, some cannot. Among the items amenable to control and improvement are programs designed to train workers for the automotive service industry—automobile mechanics/technicians.

Traditionally, automobile mechanics were trained on-the-job. People interested in becoming mechanics generally progressed from "shade tree mechanic" to an employee of some segment of the automotive service industry, e.g., service station, independent garage, or automobile dealership.

After World War II, there were moves toward formalized training programs and the creation of public and private trade schools to serve returning veterans. Federal legislation in 1964 authorized the establishment of public area vocational-technical schools to train individuals for specific jobs such as welder, carpenter, automobile mechanic and many others.

Vocational training programs for automobile mechanics are taught by experienced workers, skilled in their area of expertise, but not always highly skilled as instructors. As a result, the training programs are frequently developed around those areas in which the instructor is most competent. This approach, even though it may cover some areas well, will not always provide the training necessary for successful job performance. A better method of identifying and reviewing program content was needed.

This project will improve the quality of formal training programs by the identification and validation of those performance, program, and personal standards judged necessary for operation and review of a quality automobile mechanic/technician training program. Application of these standards in the development and evaluation of automobile mechanic/technician training programs will improve the quality of new employees who have been trained in formal programs. The improvement of quality in training will, in turn, yield significant improvement in the quality of automotive service offered to the public.

III

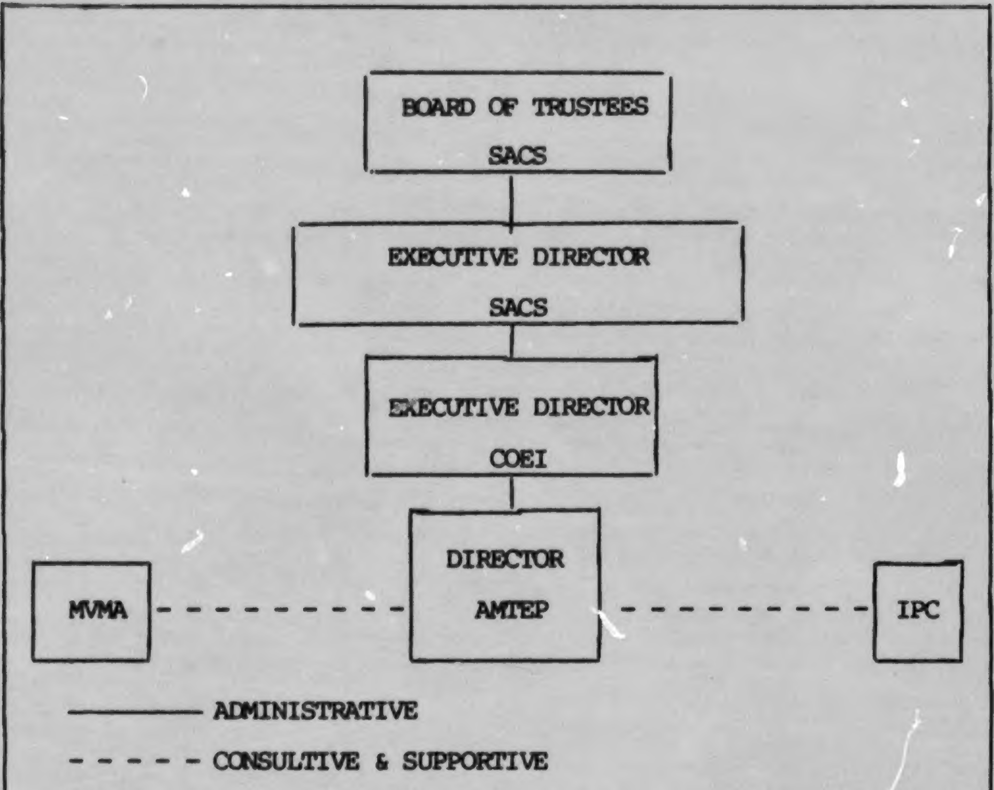
ORGANIZATIONAL STRUCTURE

Administering Agency

The administering agency for the Automobile Mechanic Training Evaluation Project (AMTEP) is the Southern Association of Colleges and Schools, Inc. (SACS). The primary objective of SACS is the improvement of education in the South and the nation through leadership and the promotion of cooperative efforts among colleges, schools, and other related agencies. Institutions hold membership in SACS through four Commissions: The Commission on Elementary Schools, the Commission on Secondary Schools, the Commission on Occupational Education Institutions, and the Commission on Colleges.

AMTEP is a project of the Commission on Occupational Education Institutions (COEI). Although the primary responsibility of COEI is the improvement of occupational education through the evaluation and accreditation of post-secondary vocational-technical education institutions, this Commission also provides regional and national leadership in promoting improvement of vocational-technical and career education through varied research and evaluation activities.

The organizational structure and operational relationship of SACS/COEI/AMTEP is illustrated in Figure 1. SACS provided central services, technical assistance, and administrative advice to AMTEP as needed and requested by project personnel. Fiscal controls, personnel management, auditing, and other services available to other members and programs of SACS were provided to AMTEP on a shared-cost basis.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SACS
EXECUTIVE DIRECTOR
COEI
DIRECTOR
AMTEP
MVMA
IPC
ADMINISTRATIVE
CONSULTIVE & SUPPORTIVE

FIGURE 1

Sponsoring Agency

The Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA) provided funding and guidance during project development.

Consulting Agency

The Industry Planning Council (IPC) was formed in 1946 and has worked diligently through the years to improve automobile service instruction. The IPC represents both industry and vocational education, and acted as a consulting unit, providing input, evaluation, and assistance as required. (Appendix J) The IPC in conjunction with MVMA initiated this project. During their annual meetings at the American Vocational Association (AVA) conventions, the concept emerged, plans were developed, funding obtained, and AMTEP was created.

IV

STANDARDS DEVELOPMENT PROCESS

The regional accrediting agencies[1] do not have specific program standards for program evaluations conducted during the institutional review. COEI does review all programs in each institution, but, because of a lack of program specific standards, relies on generic standards for all programs. Dorothy Petersen reviewed many agencies accreditation standards in a study for the Council for Postsecondary Accreditation (1979), and she stated that:

> "In view of the great diversity of institutions accredited by the regional agencies, it is not surprising that their standards on educational programs are stated only in general terms."

If vocational education is to effectively respond to requests for better accountability in the 80's, vocational programs must be subjected to closer scrutiny during the institutional accreditation visits and state evaluation assessments. This presents a problem since specific program standards exist for a relatively small number of vocational programs. As a general rule, only those programs whose graduates require some type of license or certificate of competence for employment have clearly delineated standards.

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[1] Middle States Association of Colleges and Schools, New England Association of Schools and Colleges, North Central Association of Colleges and Schools, Northwest Association of Schools and Colleges, Southern Asssociation of Colleges and Schools and Western Association of Schools and Colleges.

The purpose of the Automobile Mechanic Training Evaluation Project was to develop and validate standards and evaluation materials for programs whose purpose is to train automobile mechanics/technicians. The materials will also be useful for program improvement, in addition to their utility in evaluation activities.

Upon completion of the pilot project, the materials contain valid, reliable, and specific automobile mechanic/technician training program standards, with evaluative material relating to each standard. Additional materials include a validated task list with performance standards and a personal standards list. The development of these materials follow the model, "Training Program Standards Development Process." (Figure 2)

STANDARDS

The definition of a standard as used in this project is:

> "...something established for use as a rule
> or basis of comparison in measuring quantity,
> quality, value, etc..." Websters New World Dictionary (1973)

The project's initial activities dealt with the definition of terms as they related to project goals. The definitions used in this model are as follows:

PERFORMANCE STANDARD

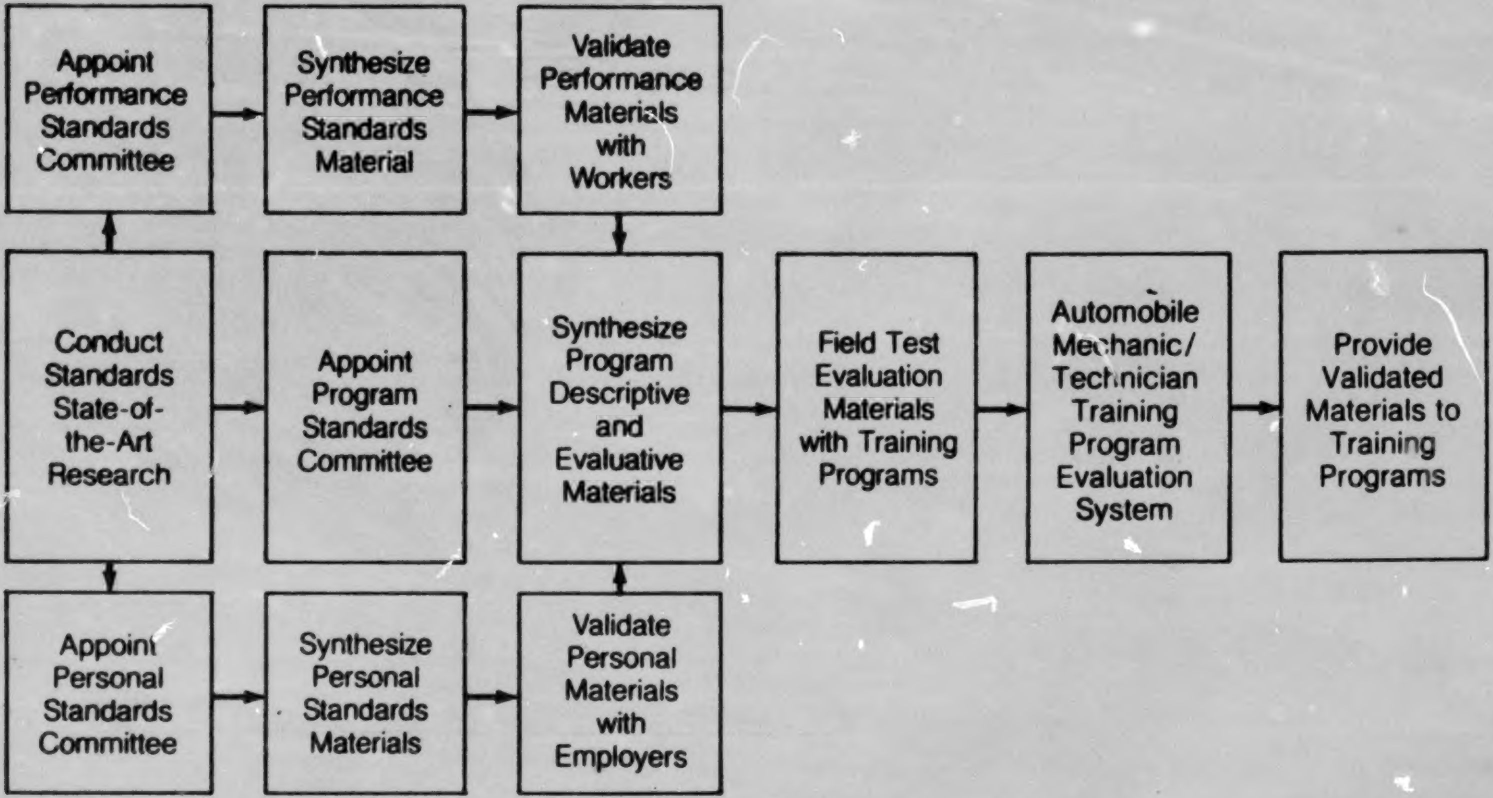
A written specification of the results of acceptable task performance.

PERSONAL STANDARD

An attribute or characteristic of an individual which facilitates entry into and advancement in an occupation.

PROGRAM STANDARD

A specific minimum quality or desired characteristic of a training program designed to prepare individuals for employment.


Appoint Performance Standards Committee
Synthesize Performance Standards Material
Validate Performance Materials with Workers
Conduct Standards State-of-the-Art Research
Appoint Program Standards Committee
Synthesize Program Descriptive and Evaluative Materials
Field Test Evaluation Materials with Training Programs
Automobile Mechanic/ Technician Training Program Evaluation System
Provide Validated Materials to Training Programs
Appoint Personal Standards Committee
Synthesize Personal Standards Materials
Validate Personal Materials with Employers

Training Program Standards Development Process

FIGURE 2

STATE-OF-THE-ART-STUDY

In the standards development process, as in any systematic development project, previous work in the area was reviewed. Since the research activities identified materials in three areas (performance, program and personal standards) the primary objective of the state-of-the-art-study (Figure 2) was to obtain standards and other pertinent materials relating to those areas (Appendix L).

The initial research utilized educators involved in evaluative activities at the national, state, and local levels. Industry training and evaluation personnel were also excellent sources of standards material because of their in-house training programs and concern for productivity. A second major resource was Educational Research Information Center (ERIC), which contained references to standards development projects, task lists, and other information.

COMMITTEES

The standards development process was systematic, with input from a wide range of experts. Input from experts provided the validity to the materials developed by staff for the evaluation system.

Three developmental committees were appointed, the Program Standards Committee (Appendix D), the Performance Standards Committee (Appendix F) and the Personal Standards Committee (Appendix H). Each committee had representatives with expertise in different areas. The project utilized automobile mechanics, service managers, and industry training representatives to provide subject matter expertise. Education representatives included both secondary and postsecondary automotive instructors, administrators, vocational evaluators, and representatives of accrediting agencies.

A fourth committee, the Executive Committee, (Appendix K) was appointed to develop policy and provide guidance during the implementation phase. This committee had representatives from industry and education, who provided a balance of input in the policy area.

Each committee's initial work outline was similar. The objective of each developmental committee's first meeting was to review pertinent materials collected during the state-of-the-art research, identify useful standards materials and develop initial standards. As a minimum, the initial meeting provided direction for staff development of the materials. The committees met from one to three times during the developmental phase of the project to develop and revise the materials. After the first meeting, the committees' work involved more specific activities, depending on the expected result of committee activities.

PROGRAM STANDARDS COMMITTEE

The Program Standards Committee, (Figure 2, Appendix D) had the largest and most complex assignment. This committee assisted and advised the staff in developing several products required for the evaluation system. Products of this committee included the following:

1. A set of standards describing specific minimum qualities or desired characteristics of a training program designed to prepare individuals for employment in the automobile service industry (Appendix A).
2. An evaluation guide (with items relating to each standard) used by visiting team members during the on-site evaluation activities. This guide was designed to provide information on the program's status relative to each standard (Appendix B).

3. An institutional self-study guide containing the same items as the evaluation guide with a modified introduction. (Appendix C)
4. A pilot test site feedback form. (Appendix M)
5. An evaluation team member feedback form. (Appendix N)
6. An instructor/team member questionnaire for collecting personal data about work experience, formal training, and general information. This was used to establish a pool of potential vocational evaluators and collect background information on the instructional staff and team members. (Appendix P)
7. A visiting team member training guide, included with the evaluation guide.

Each of these items was revised as required by feedback (Appendix O) from the field test activities (Figure 2).

PERFORMANCE STANDARDS COMMITTEE

The Performance Standards Committee (Figure 2, Appendix G) was charged with identifying tasks performed by automobile mechanics, and developing a performance standard for each task. This task list was validated through a survey (Appendix E) of 250 automobile mechanics/technicians, using systematic sampling techniques for worker selection. Workers provided content validity to the task list by indicating the tasks actually performed on-the-job. This data was then analyzed, and a validated task list was produced for automobile mechanic/technician training programs for curriculum development and articulation purposes.

A task list with performance standards was developed, validated, and distributed. A task list is the basic component of a performance based curriculum. Instruction and hands-on training on specific tasks in each area will also be required for certification of training in specific specialty service areas. In performance based instruction, the presentation mode is secondary to the result of the instruction—competency in performing a specific task or tasks. Therefore, the instructional delivery system and presentation modes were not specified in the standards, only that the method of determining competency must use criterion referenced measures.

Program standards can be developed without developing and validating a task list and related performance standards. The program development/evaluation process was seen as a system, however, and the performance materials were a sub-system of the process.

PERSONAL STANDARDS COMMITTEE

The third committee was the Personal Standards Committee (Figure 2, Appendix I). This committee identified a list of personal standards or characteristics which were validated through a survey of employers of entry level automobile mechanics/technicians. This survey (Appendix H) asked employers to rate character traits, behaviors, knowledge and other items considered important for employment in the automotive service and repair occupation.

Each committee had a slightly different mix of experts in each area, and required several meetings over the duration of the project. The majority of specific product development and revision work, however, was a staff responsibility.

FIELD TEST OF THE EVALUATION MATERIALS

Field testing of the evaluative materials and procedures developed by the committees and staff was a major project activity. (Figure 2) Kosecoff and Fink (1978) delineated the purpose for extensive pilot or field test activities in the following rationale.

"The purpose of a pilot test is to answer questions like these:

- Will the instruments provide the intended information?
- Are certain words or questions redundant or misleading?
- Are the instruments appropriate for their audience?
- Can information collectors use the instruments properly?
- Can they administer, collect, and report information using the written directions and special coding forms?
- Are the procedures standardized? Is everyone collecting information the same way?
- How consistent is the information obtained by the instruments? (Reliability)
- How accurate is the information obtained with the instruments? (Validity)

Pilot testing should be conducted under conditions similar to those you expect to have for the evaluation, and should involve a representative sample of evaluation participants...".

In addition to the purposes identified above, the field test included these additional goals:

1. To provide feedback from experts in the field regarding revision of the standards, evaluative materials, and procedures used during the field test activities.

2. To develop a wide awarness of the project activities and goals at all levels — federal, state, and local.

Field test activities were carried out over a two year period in three phases, providing time between each phase for committee review of the materials based on feedback from the pilot test site visits. Thirty-two nationwide sites were visited, representing automobile mechanic/technician training programs at both the secondary and post-secondary levels. With a wide range of programs reviewed, the reliability and validity of the instruments and procedures were enhanced. For materials with a high degree of utility, feedback must be obtained from any program type which may be evaluated using the standards and procedures. Widely diverse activities are used to produce a trained, employed program completer, and the standards and evaluative material must be able to accommodate a wide range of instructional philosophies and methods.

The sites were visited in three phases. The first phase included six sites, providing immediate feedback for initial revision of the materials. Phase II included 20 sites and this phase required less revision of the materials. The final phase included six sites and material finalization activities.

Upon completion of the Phase III field tests, only minor modifications of the materials were required. During Phase III, an Executive Committee consisting of selected project participants was appointed and assumed responsibility for 1) further standard and procedures review, 2) development of policy and 3) initiation of activites leading to institutionalization of the standards and program review process.

The field test portion of the project was the most complex activity of the process, due to the coordination and quality control requirements, both responsibilities of the project staff. Pilot test sites were solicited and selected, visiting team members identified and appointed, site visit logistics arranged, and post site visit verbal and written feedback provided. Feedback from the test sites and team members was solicited and synthesized for the committee's use in revision of the materials and procedures.

ESTABLISHING VALIDITY

To assure reliability and validity of the evaluative materials it was necessary to develop background information in establishing the reliability and validity of "check lists" used for interviewing or survey activities.

A primary resource in answering validity or reliability questions was the Standards for Educational and Psychological Tests (1974), published by the American Psychological Association (APA). This document is recognized by the United States Office of Education, American Psychological Association, American Educational Research Association and the National Council on Measurement in Education as the basic reference for any assessment activities relating to individuals or their activities. In reviewing the APA standards, the following elements were pertinent to establishing the validity of the evaluation materials:

1. "...the standards (APA) are intended to be widely applicable both to standardized tests and a wide variety of other assessment techniques..."

2. "...it may not be possible to apply the standards (APA) with the same rigor, but the kind of judgements the interviewer is to make can be identified; the time and procedures for developing and recording them can be standardized..."

3. "...generally, the word 'test' is used in these standards (APA) to apply to all kinds of measurement..."

4. "...some assessment techniques are used as interview aids..."

5. "...when tests, projective or otherwise, are used as aids to an interviewer's assessment, the interviewer himself is the final assessment device, and his assessments become the scores..."

6. "...the developer of such an interview aid need not indicate his test's validity by coorelating it with any simple criterion..."

The APA standards definition of a test indicated that the evaluation guide could be considered an assessment device -- specifically, an interview aid. An interview aid was defined in this project as a check list or other aid which assists the interviewer (evaluation team member) in assessing the degree to which the item being reviewed (the training program) meets a given standard or substandard. This structure was quite complex, given that validation and reliability studies are usually conducted on traditional tests which yield a specific score.

In this program evaluation project, the "score" was the assessment of the evaluation team member regarding the programs status on each standard item. A critical part of the "validity" of the instrument lay in the expertise of the team member, and the training the team member had in using the instrument and reporting on the status of each standard item.

The APA standards indicated that "the many types of validity questions can, for convenience, be reduced to two: a) What can be inferred about what is being measured by the test? and b) What can be inferred about other behavior?"

For this project, type "a" was the primary concern since the evaluation guide (interview aid) was defined as a type of test for validation purposes. The APA standards (1974) further indicated that, "The measuring instrument is an operational definition of a specified domain of skill or knowledge, or of a trait, of interest to the test developer or user." This was the purpose of the standards and related evaluation materials, to operationally define a quality training program.

The validity question was narrowed further in the following APA statement, "The essential problem in this context is to reach some conclusion as to how faithfully the scores represent that domain...", or in the terms of Fox (1969), "Validity is defined as the extent to which the procedure actually accomplishes what it seeks to accomplish or measures what it seeks to measure." Kosecoff and Fink (1978) state that "...to be valid, an instrument...must actually measure what it is intended to measure..." In this standards project the "domain" being operationally defined was an automobile mechanic/technician training program.

In determining the validity of an instrument, a critical point was made in the APA standards (1974). "It is important to note that validity is itself inferred, not measured...It is something that is judged as adequate or marginal, or unsatisfactory..."

The lowest validity that an instrument can have is "face validity." This means that by reviewing the instrument and observing the items, it appears that the instrument will measure what the designer says it measures. Therefore, face validity, (on the face of it) the instrument appears to be valid. Face validity existed at a very early stage of item development. The developers reviewed the materials and observed that these items did appear to measure how well a standard was met.

A higher order of validity, "content validity", applies to the AMTEP evaluative materials. Content validity, according to Ary, Jacob and Razavieh, (1979) "...refers to the extent to which the instrument represents the content of interest...", or once again, how well the instrument operationally defines the training program. Fox (1969) indicated that,

> "For many data gathering procedures, such as questionnaires and interview guides, content validity is the strongest technique available to the researcher. Fortunately, content validity is stronger than face validity, although it too is data free and relies on either/or judgement. True content validity argues that the instrument measures what it seeks or purports to measure because there was a rational, and ideally an empirical, basis to the selection of the actual content..."

Borg and Gall (1979) stated that "Content validity is the degree to which the sample of ...items represents the content that the test is designed to measure..." To establish the face and content validity of the evaluative materials, the degree to which the items operationally define an ideal training program had to be verified.

The content validity of the evaluative materials can be established in several ways. According to Kosecoff and Fink (1978), one method of establishing an instrument's validity is by asking for experts judgement. Content validity, in their opinion, "...is usually established by asking experts whether the items are a representative sample of the skills and traits you want to measure." They further state, "An instrument can be validated by proving that its items or questions accurately represent the skills or characteristics that it is intended to measure..."

The APA standards (1974) indicated that, "Content validity is determined by a set of operations, and one evaluates content validity by the thoroughness and care with which these operations have been conducted. In contrast, face validity is a judgement that the requirements of a test merely appear to be relevant..." The APA standards (1974) also indicate that "...to demonstrate the content validity of a set of test scores, one must show that the behaviors demonstrated in testing constitute a representative sample of behaviors to be exhibited in a desired performance domain...", a score being defined as the interviewer's or team member's assessment of the program's standing on any given standard item. Also, the APA standards (1974) are "applicable both to standardized tests and a wide variety of other assessment techniques..."

Fox (1969) stated that, "Another way of conceptualizing content validity is to consider it an estimate of the representatives of the content of the instrument as a sample of all possible content..."

Ary et al.(1979) concur when they provide the following.

> "In assessing the content validity of a measuring instrument, one is concerned with the question: How well does the content of the instrument represent the entire universe of content which might be measured?" They further state that, "Content validity cannot be expressed in terms of a numerical index. Content validation is essentially and of necessity based on judgement and such judgement must be made separately for each situation. It involves a careful and critical examination of the items as they relate to the specified content area. One must judge if the content and objectives measured are representative of those that constitute the content domain. One should determine whether the items represent the course and objectives as stated in curriculum guides, syllabuses, and texts. In order to obtain an external evaluation of content validity the test maker should ask a number of experts or other teachers to examine the content systematically and evaluate its relevance to the specified universe. If all agree that the items represent the content domain adequately, the test can then be said to have content validity..."

From this discussion, it can be concluded that expert review of the materials can be used to establish the evaluative materials.

Material validation was accomplished at many stages in the project. First, all committee members (experts) were asked to review the materials and respond with recommendations for changes which would increase validity. Second, experts on the visiting teams and at each pilot test site were asked to respond to the procedures, standards, and evaluation materials. Third, the materials were distributed widely to experts not involved in the project for their review and input. Experts in this sense were of two major types. 1) Incumbent workers or instructors in the area, 2) vocational evaluators experienced in program review.

RELIABILITY

Reliability is primarily a question of consistence of a measurement over time, or according to Kosecoff and Fink (1978), "A reliable instrument will provide consistent measures of important characteristics despite background fluctuations..." Wolf (1979), however, stated that:

> "The precision with which a characteristic is measured is a secondary consideration to validity. Second, conventional notions of reliability do not apply to the evaluation of courses, programs, and curricula in the same way as to the measurement of individuals. Reliability theory and procedures for estimating the reliability of measures developed out of a concern for the latter..."

This was applicable to the materials developed in this project. Neither the evaluative materials nor the project assessed specific individuals activities. The total focus was the development of materials and procedures to evaluate programs for the purpose of improvement and certification of quality.

Wolf (1979) further stated, "Using subscores and even single items can provide program personnel with important information about successful aspects of the program..." This was the function of the evaluation guide - identifying specific items or facets of the program to be reviewed for quality by the team members. The large number of items reviewed during the site visits provide a composite picture of the program, preventing background fluctuations from lowering the consistency of the program review activities.

Through review by committee members, feedback from pilot test sites, team members and other experts, the evaluation materials had face and content validity. The reliability was demonstrated by the ability of the team members to consistently identify portions of the program under review which did not meet the standards. This consistence was verified by feedback from the visiting team members and the pilot test sites (Appendix O).

PRODUCT DISSEMINATION

Since products were developed for two different purposes, (program development and program evaluation), planning reflected the different audiences which would use the products. In the first area (program development) the primary product were a task list and performance standards. These were provided to project participants and will be provided to certifed and candidate programs upon project implementation.

Other major products were the program standards, related evaluation materials and systematic evaluation process. The primary users of these products will be the organization(s) responsible for program review and quality certification.

The development of a wide awareness of the project and its goals was a major part of the implementation of the materials developed in the pilot project. One of the initial awareness activities in the project, conducted during the state-of-the-art study, was the development and distribution of a project brochure.

The brochure informed interested individuals of the project and the usefulness of its products, and also solicited participation in the project from all levels. Participation by a wide range of concerned individuals was mandatory for acceptance of the project and its products.

The extensive pilot test activites also had a major effect in product acceptance. By pilot testing nationwide and involving many people in the automobile mechanic/technician training and service field, awareness and acceptance was promoted. This also improved the validity of the process and products.

REFERENCES

1. Ary, D., Jacobs, L. C., Razavieh, A., Introduction to Research in Education. New York, New York, Holt, Rinehart and Winston, Inc., 1979.
2. Borge, W. R., Gall, M. D., Educational Research. New York, New York, Longman, Inc. 1979.
3. Fox, D. J., The Research Process in Education. New York, New York, Holt, Rinehart and Winston, Inc., 1969.
4. Kosecoff, J. and Fink, A., An Evaluation Primer. Washington, D. C., Capitol Publications, 1978.
5. Petersen, Dorothy G., Accrediting Standards and Guidelines, a Current Profile. Washington, D. C. Council on Postsecondary Education, 1979.
6. Standards for Educational and Psychological Tests. Washington, D. C., American Psychological Association, 1974.
7. Webster's New World Dictionary. New York, New York, Popular Library, 1973.
8. Wolf, R. M., Evaluation in Education. New York, New York, Praeger Publications, 1979.

V

PROJECT STATUS

The goal of this project was the development and implementation of standards, evaluative material and procedures to be used in the quality certification of automobile mechanic/technician training programs. A secondary goal was the development of materials to be used by schools in a systematic delivery system for the training of automobile mechanics/technicans. The components of the system included the following:

1. A validated automobile mechanic/technician task list with performance standards (Appendix E, F).
2. A validated list of personal standards/characteristics employers want entry level employees to exhibit. (Appendix H)
3. Standards, evaluative materials and procedures for program improvement and certification (Appendix A, B, C).

Each of these components was researched, developed, and revised with committee and project participants' assistance. Materials develop-ed by the project will be distributed to programs which participated in the developmental process ,and to others as the evaluation process is implemented.

The development process was in three phases. Phase I included state-of-the-art research in the program, performance and personal standards areas. Phase II included evaluative and descriptive material development, validation and initial product field tests at 26 sites. Phase III included field testing and validation of all materials which will lead to the implementation of the accreditation/certification process.

Phase I

Phase I activites were developmental in nature. A major activity was the establishment of cooperative relationships with groups such as the American Vocational Association, National Institute for Automotive Service Excellence, Michigan Bureau of Automotive Regulation, Regional Offices of the Motor Vehicle Manufacturers Association, Motor Age Magazine, and vocational educators at the national, state and local levels.

Research activities to determine the state-of-the-art of standards in the automobile mechanic training program areas were the second major activity in Phase I. As a part of this activity, letters (Appendix L) requesting copies of existing standards for automobile mechanic training programs were sent to nearly 600 vocational and industry representatives. These initial inquiries provided the basic material for committee review.

During this research activity, positive responses for participation were received from more than 130 schools (Appendix L). These schools comprised the initial group of candidates for voluntary program review. A sample of automobile mechanic training programs was selected from this pool and additional volunteers asked to participate as pilot test sites during Phase II and III (Appendix Q).

The project staff reviewed the performance standards material received during the state-of-the-art research (primarily automobile mechanic task lists) and selected specific task lists or sets of performance standards for further review by the Performance Standards Committee. This committee was charged with the identification of incumbent automobile mechanic tasks and performance standards in eight major areas of automobile repair. These areas are: Engine Tune-up, Electrical Systems, Automatic Transmission, Manual Transmission and Rear Axle, Heating and Air Conditioning, Front End, Brakes, and Engine Repair.

Tasks and performance standards were identified in this grouping for four primary reasons. First, the eight areas coincide with major sub-systems of the automobile; second, many training programs are organized in this manner; third, the national automobile mechanic certification tests are organized in these groups; and fourth, a program specialty offering will be certified only if training for the tasks identified as High Priority (H.P.) is provided in the curriculum. Organization of the tasks and related performance standards in this structure assures continuity with existing systems.

The Performance Standards Committee was the only committee which met during Phase I. At this meeting, (Appendix G) the group reviewed the state-of-the-art research material for commonality and characteristics of excellence, and synthesized a draft automobile mechanic task list. This task list was expanded and validated during Phase II and III (Appendix E).

Phase II

Phase II included the initial development of the program and performance standards. Development of the program evaluation procedures and extensive field test activities were a major part of this phase.

The Program Standards Committee was established during this phase and met two times. (Appendix D) The first committee meeting had four objectives: 1) Orientation of the committee members to the project and the responsibilities of the committee, 2) Review of existing program evaluation material, 3) Development of draft standards and an evaluation guide for training program review, 4) Provide input to project staff for an evaluation team training guide

The standards developed by this committee included sections dealing with Program Purpose, Administration, Learning Resources, Finances, Student Services, Instruction, Equipment, Facilities, Faculty, and Cooperative Agreements. (Appendix A)

The second Program Standards Committee meeting was held after the evaluative materials had been field tested at the first six pilot test sites. At this meeting the evaluative materials were reviewed and revised, using feedback from the evaluation teams, pilot test sites and committee members. Field testing of the evaluative materials at 26 sites was a major activity during Phase II. The field testing was in two sets: The initial set of six, and a second set of 20 sites which were reviewed after revision of the evaluative materials by the Program Standards Committee.

The schools selected were volunteers, and representative in terms of geography and enrollment. (See Appendix Q) Each program (school) agreed to be a part of the project, complete all the required materials, host the teams, and participate on a continuing basis.

A critical part of the overall project was participation of automotive instructors. Selected instructors were trained in the techniques used in the evaluation process, and are the cadre of trained evaluators for future activites. This provided support at the local level for existing activities and will assist in implementing the evaluation system.

The Personal Standards Committee was established during Phase II. (Appendix I) This committee identified those attitudes, behaviors, and interpersonal skills considered necessary for entry into a position as an automobile mechanic. Existing automobile mechanic training materials dealing with job entry skills and the affective domain were reviewed by the committee, and a draft Personal Standards list developed. This list (Appendix H) was sent to employers of automobile mechanics/technicians during Phase III for validation.

The statement of work for Phase II of AMTEP outlined eleven distinct tasks. This section of the report details the status of the project relative to each of these tasks.

Task 1

Appoint a Program Standards Committee to assist in the development, assessment and revision of automobile mechanic training program evaluative materials.

Status:

A Program Standards Committee was appointed and met two times during Phase II of the project. The result of this committee activity was the development of Draft I, II, and III of the program standards and an evaluation guide for automobile mechanic/technician training programs.

Task 2

Identify a representative sample of automobile mechanics to validate the task list established by the Performance Standards Committee.

Status:

The National Institute for Automotive Service Excellence (NIASE) in conjunction with the Educational Testing Service (ETS) selected a systematic sample of mechanics who had passed one or more of the eight tests in the following catagories: Front End, Brakes, Heating and Air Conditioning, Engine Tune-Up and Emission, Automatic Transmission, Electrical System, Manual Transmission & Rear Axle, and Engine Repair.

An automobile mechanic survey instrument (Appendix E) was developed and mechanics were surveyed. The data from this activity was not processed until Phase III, however. (For further information see Page 41 and Appendix E)

Task 3

Convene the Performance Standards Committee to establish performance standards for the validated task list.

Status:

The Performance Standards Committee met twice during Phase II (Appendix G). At these meetings, the committee completed the Draft IV task list and developed a performance standard for each task. The performance standards were developed using the "jury of experts" method (many of the committee members are, or have been, involved in the automobile service field). A performance standard was developed for each task as a basis for a performance test to determine competency in task performance. This list contained basic standards, which in many cases are dependent upon the manufacturer's specifications for the equipment being worked on. (Appendix F)

Task 4

Identify a representative sample of automobile mechanic training programs for a voluntary review using the developed evaluative materials.

Status:

Automobile mechanic training programs from 25 states and the District of Columbia were selected to participate as pilot test sites during Phase II. (Appendix Q). These programs were selected as representative of vocational automobile mechanic training programs at the secondary and postsecondary level. The programs ranged in size from 13 students to 140 students. The number of instructors in the programs ranged from one to six. Postsecondary programs included those in Community Colleges, Junior Colleges, Area Vocational Schools and Technical Institutes. Those at the secondary level included comprehensive high schools and area vocational-technical centers.

Schools selected agreed to host a two member team and provide feedback to project staff regarding the standards, related materials and procedures.

No attempt was made to rate programs relative to other programs. The programs were reviewed relative to the draft program standards and a report covering the visiting team observations was then returned to each site. For a schedule of site visit activities see Appendix R. The evaluation guide introduction (Appendix B) outlines evaluation team procedures and activities.

(The evaluation reports to the schools are considered confidential, and are not included in this report.)

Task 5

Develop an automobile mechanic training program self-study manual for self evaluation prior to formal evaluation team visits.

Status:

The self-study manual (Appendix C) is used by the automobile mechanic/technician training program to assess its status on each standard item prior to the evaluation team visit. The self-study manual developed for this project contains the same items relative to each standard as the evaluation guide, with the difference in the two documents being the introductory portions. The reason being that the program personnel will review the program prior to the team's arrival, asking the same questions, and reviewing the same material as the team. This facilitates discrepancy identification during the team visit, and avoids the problem of unanticipated questions by team members during the visit. The evaluation guide and self-study items are subjective in many cases, since no two programs are alike in all aspects, and there are many ways to train a competent mechanic; therefore, the program personnel are provided the opportunity to indicate the rationale for the methods used, or the lack of a characteristic called for in the standards.

Task 6

Conduct evaluative materials field test activities at six (6) initial sites.

Status:

The six initial pilot test site activities commenced on September 24, 1979, and were completed November 2, 1979. (For a complete listing of pilot test sites and team members see Appendix Q). Feedback from the pilot test sites,visiting team members and the Industry Planning Council (Appendix O) was used in the development of Draft II of the program standards and evaluation materials.

Task 7

Revise evaluative materials as required and field test at (20) additional sites.

Status:

Draft II of the Program Standards and evaluative materials was reviewed by the Program Standards Committee during their January, 1980 meeting. This activity resulted in Draft III of the standards and evaluative materials.

Because of the time lag between meetings and revision of the materials, the programs reviewed during January, February and March of 1980 were reviewed using Draft II of the materials. The pilot test site programs reviewed during April, May and June of 1980 were reviewed using Draft III of the materials. Extensive changes were made in the materials in the Draft III revision. Many of the Draft I and II items proved to be redundant, and several items were added for Draft III.

Most of the feedback from pilot test site programs and team members was constructive and positive. Feedback forms were given to pilot test sites (Appendix M) and team members (Appendix N) and the instructors and team members were asked to critique the standards, evaluative materials and procedures. This feedback material was then reviewed by project staff and committee members. Review of the materials by experts provided content validity to the standards, procedures and evaluative material. (See Unit IV for information on product validity).

Pilot test site activities also provided feedback to the programs on the perceived quality of their operation. Each program was reviewed relative to stated goals, the draft program standards and observable indicators. This feedback to the program was useful to them for program improvement. Suggestions or recommendations made by the visitng team members were not a mandate for change, but if implemented would improve the quality of the program.

Task 8

Appoint a Personal Standards Committee
to assist in the identification, assessment
and revisions of an item list of those attitudes,
behaviors, and interpersonal skills necessary for
success as an automobile mechanic.

Status:

A Personal Standards Committee was appointed and met during Phase II (Appendix I). A draft personal standards items list was developed by the committee and was validated by employers of automobile mechanics during Phase III of the project. (Appendix H)

Task 9

Continue cooperative relations with the American Vocational Association, American Association of Community & Junior Colleges, National Institute for Automotive Excellence, Automotive Service Councils of America, National Association of State Directors of Vocational Education, et al..

Status:

The project coordinator and project director met with the Program Standards Committee of the American Vocational Association (AVA) at the annual meeting in Anahiem, California, in December of 1979. A representative of AVA also participated as a pilot test site observer.

Brochures and other information were distributed at the American Association of Community and Junior Colleges meeting in San Francisco during April of 1980.

The project coordinator and project director presented the project to the Board of Directors of the National Institute for Automotive Service Excellence (NIASE). The Board passed a resolution of support of the project. NIASE has also provided a systematic sample of NIASE test passers to be used in the task list validation process.

A representative of the Automotive Service Councils of America (ASC) has been appointed to the Personal Standards Committee, and the ASC will be assisting the project validation of materials.

Contacts with the National Automobile Dealers of America (NADA) have been initiated, and information is being shared with representatives of that organization. Training programs not aware of the NADA apprenticeship program are being informed of this activity for possible participation.

The project coordinator presented the project to the State Directors of Vocational Education at their 1979 fall meeting in Arizona and had further discussion with the group at the 1980 meeting in Maine.

The project director presented a project overview to the Board of Directors of the Vocational Technical Education Consortium of States (V-TECS), the Executive Committee of the Occupational Commission, Southern Association of Colleges and Schools and two Environmental Protection Agency meetings. Seminars dealing with the project were also presented by the project director at the National Association of College Automotive Teachers annual convention in Ann Arbor, Michigan. The project coordinator and project director presented the project to the Service Managers Committee of the Motor Vehicle Manufacturers of America, Inc. (MVMA) in August, 1979.

All regional accreditation agencies have been kept informed of AMTEP activities in their areas and periodic reports have been given to the staff of the regional and institutional organizations during their bi-annual meetings in 1978, 1979, and 1980. State Directors of Vocational Education have also been informed of activities in their states.

The project coordinator and project director presented project materials to the Industry Planning Council (IPC) for their information and review at the AVA convention during December, 1979.

Task 10

Prepare End-of-Year Report for MVMA Contract Administrator.

Status:

The Second Annual Report, July, 1980, was the result of this task.

Task 11

Assess and revise proposal for Phase III Work

Plan and submit to sponsor for evaluation.

Status:

A revised proposal for Phase III was submitted to the sponsor.

Phase III

Phase III was the final stage in the developmental process. During this phase, the automobile mechanic/technician survey responses were processed, (Appendix E) the employer survey was conducted and the results of the survey compiled. (Appendix H) The primary products of the project — a set of Program Standards (Appendix A), an Evaluation Guide (Appendix B) and a Self-Study Guide (Appendix C) — were completed during this phase. Several reports, manuals and guides were also completed during Phase III. These documents are listed on page 49 under the status of Task 9. The number of pilot test sites visited was decreased and no developmental committee meetings were held during this phase. This was due to reduced funding precipitated by the down-turn experienced by the automotive industry in 1980-1981. This decrease in activities has not adversely effected the final products, however. The activities that would have been conducted at developmental committee meetings were handled by mail and telephone, and the pilot test activities provided sufficient feedback for validation of the standards and procedures. The Executive Committee made the final determination on the Program Standards, using feedback from the field test sites (Appendix O) and the automotive industry.

The statement of work for Phase III of AMTEP outlined ten distinct tasks. This section of the report details the status of the project relative to each of these tasks.

Task 1

Process the data from the automobile mechanic/technician survey conducted during Phase II.

Status:

The basic component of any curriculum or training delivery system is a validated task list. Through the development and validation of a list of tasks presently performed by automobile mechanics/technicians, a solid base for curriculum development/modification is available. The use of a task list also facilitates communication and articulation with other institutions in the region that have offerings in the same or a similar area. This is especially critical in the automotive field, where the majority of secondary and two year postsecondary institutions offer automotive courses.

The automobile mechanic/technician task list (Appendix E) was validated by a sample of mechanics/technicians who had passed one or more of the National Institute for Automotive Service Excellence (NIASE) exams. The response rate for this survey is detailed in Table 1. This population was chosen (rather than attempting to survey the entire universe of automobile mechanics) to identify tasks performed by recognized competent automotive service personnel.

This task list will need to be updated on a regular basis, since new and emerging tasks such as those dealing with turbochargers and computer controlled combustion will show up as a small percentage performing, but will be critical areas of automotive service in the future. These tasks should be included in the curriculum even though the survey indicated a small percent performing the task(s).

The tasks in the speciality areas were sequenced in a logical manner, but this does not mean that this sequence was any better or worse than one the user may establish.

The majority of tasks have two sets of identifiers associated with each task. The first number is a percentage, and is the percent of the mechanics/technicians responding to the survey that indicated they performed this task. The second space includes an "H.P." (High Priority) indicating the task must be included for certification of that specialty area, and may also include the word "basic" which indicates the task should be included in the basic automotive course.

Theory instruction and hands on performance of all the basic tasks will provide training for employment in the automotive service field, or further training in any or all of the specialty areas. "H.P." tasks are tasks which have intermediate or advanced skill level performance requirements. Theory instruction and performance training for all of the "Basic" and "H.P." tasks in a specialty area are required for certification of that area. Competency in performance of all "Basic" and "H.P." tasks in all specialty areas would prepare the student for the exit point called Automobile Mechanic, D.O.T. (Dictionary of Occupational Titles) Code# 620.261-010. In all areas, appropriate theory, safety and support instruction will be required for course completion.

AUTOMOBILE MECHANIC/TECHNICIAN SURVEY

1980

FIRST MAILING

TOTAL INSTRUMENTS MAILED	150
USEABLE INSTRUMENTS RETURNED	39
NON-USEABLE INSTRUMENTS RETURNED	5
INSTRUMENTS RETURNED TO AMTEP DUE TO INCORRECT ADDRESS	9

SECOND MAILING (FOLLOW-UP)

TOTAL CARDS MAILED	97
USEABLE INSTRUMENTS RETURNED	8

THIRD MAILING

TOTAL INSTRUMENTS MAILED	100
USEABLE INSTRUMENTS RETURNED	29
NON-USEABLE INSTRUMENTS RETURNED	4
INSTRUMENTS RETURNED TO AMTEP DUE TO INCORRECT ADDRESS	14

RESPONSES/GRAND TOTAL

USEABLE INSTRUMENTS RETURNED	76
NON-USEABLE INSTRUMENTS RETURNED	9
TOTAL	85

****

TOTAL INSTRUMENTS MAILED	250
OVERALL RETURN RATE	34%
USEABLE RETURN RATE	30%

TABLE 1

Task 2

Establish the content validity of the performance standards material.

(For a discussion on the methods of establishing content validity, see page 16 of this report.)

Status:

The Performance Standards Committee did not meet during Phase III of the project due to the decreased level of funding available. The committee did, however, provide input to staff on the Performance Standards by mail. This provided a forum for response and input into the final set of standards.

The standards were also reviewed by project participants (Appendix S) and other interested parties, including representatives of the automobile manufacturers. Reviewers included automobile mechanic instructors, automobile mechanics/technicians and service trainers for the automotive industry. The Performance Standards (Appendix F) are the basic component for the development of criterion referenced or performance based tests. The specific test procedures, equipment used, time requirements and other specifics of the test need to be developed locally to meet local needs.

Task 3

Convene the Performance, Program, and Personal Standards Committees to finalize materials.

Status:

The developmental committees did not meet during Phase III due to decreased levels of funding available for project activities.

Task 4

Host a meeting of participating and interested schools, programs, and individuals in conjunction with the American Vocational Association (AVA) conference in New Orleans for the purpose of discussing possible implementation of the AMTEP processes and products.

Status:

A meeting was held Saturday, December 6, 1980, at the AVA Convention in New Orleans, Louisiana. Letters (Appendix T) were sent to automotive educators nationwide asking them to attend the meeting. The presentors (Appendix T) discussed the need for quality automotive training, the background of the project, the concept of accreditation and project activities to date. A panel of project participants discussed the effect of project participation on their programs, and a general question and answer session followed the presentations.

Approximately 125 people attended the meeting. Attendance was acceptable, but would probably have been greater with better economic conditions.

Implementation was discussed only peripherally, due to a lack of specific information. Implementation responsibilities were discussed, however, and these are covered on pages 65 - 66 of this report.

Task 5

Field test the AMTEP processes and products at as many sites as possible, nationwide, either as a single program or in conjunction with other site visitations.

Status:

Six pilot test sites were visited during Phase III, (Appendix Q) providing further validity to the evaluation materials and procedures.

The regional accreditation agencies were contacted about the possibility of AMTEP personnel participating in their institutional accreditation activities (Appendix U). There were problems with concurrent ATMEP program evaluation. The institutional evaluation by a regional agency is preceded by an extensive time period (generally two years) spent in preparation of the self-study for the institutional visit. This meant that the majority of institutions which could be visited during Phase III were far along in their self-study and preparation for the regional accreditation visit. Even though the AMTEP self-study is relatively simple, the added burden of this "last minute" activity was not seen as beneficial to the institution. Therefore, no concurrent reviews were carried out.

One implementation consideration discussed was the possibility of a central agency certifying program quality on the basis of the accreditation report developed by a regional accreditation agency during the on-site team visit. In light of this option and the lack of concurrent reviews, the regional accreditation agencies were contacted about the possiblity of an AMTEP representative acting as an observor during the institutional visit (Appendix U).

Several questions about the regional procedures and standards needed to be answered about the feasability of using a regional report to certify the quality of automobile mechanic/technician training programs.

The primary question was -- "Are the standards used in the institutional accreditation process developed and applied in a manner which will give a valid and reliable indication of the quality of the automotive program?" The answer to this question was not positive. In two of the three regions visited, (the New England Association of Colleges and Schools and the Western Association of Colleges and Schools--Accrediting Commission for Community and Junior Colleges), no standards, institutional or program, are used to determine quality. In the New England activities, the team is responsible for making a subjective judgement as to the "quality" of the institution and its activities, and then, deciding if the activities are consistent with the institutional philosophy and objectives. The Western Association team is charged with "validating" the self-study developed by the institution. This is also subjective, dependent upon the experience, bias, and temperment of the individuals on the team, and the leadership of the team chairman.

The third regional observation was with the Southern Association of Colleges and Schools--College Commission. This Commission does use standards to assess the quality of training, but only generically. The standards are applicable to programs in a broad sense, but depend on the expertise of the team member to determine the quality of any specific training program offered in the institution.

These observations are not meant to demean the dedication of the people involved in institutional review and accreditation activities. The purpose of the AMTEP staff observation activities was to determine if the regionals' reports could be used to assess and certify the quality of the automobile mechanic/technician training program during the institutional evaluation. The answer to this, in the opinion of this writer, is "No." There is too much subjectivity, lack of specificity and variance in activities for this approach to be used for the certification of the quality of the automobile mechanic/technician training program.

A further problem with concurrent activities was the lack of positive response to the AMTEP request to act as an observor during the regional visits. The Northwest Association of Colleges and Schools did respond positively, but due to budget restraints and time consideration, no AMTEP observor participated in their activities. Of the remaining agencies, the Middle States Association of Colleges and Schools—Commission on Higher Education responded negatively and the North Central Association of Colleges and Schools did not respond.

During the field test activities, a total of 32 automobile mechanic/technician training programs were visited. The primary purpose of this activity was to validate the Program Standards and evaluation procedures. To accomplish and verify the validation activities, feedback from experts was solicited during the site visits. This feedback was obtained both informally and formally with the primary sources of feedback being the team members and pilot test sites. The feedback results (Appendix O) were used to modify the procedures and standards as reflected in the various drafts of the Program Standards (Appendix A), the Evaluation Guide (Appendix B), the Self-Study (Appendix C), and the various feedback materials (Appendices M, N, O).

Task 6

Continue cooperative relations with the American Vocational Association, American Association of Community and Junior Colleges, National Institute for Automotive Service Excellence, Automotive Service Councils of America, National Automobile Dealers Association, National Association of State Directors of Vocational Education, Vocational-Industrial Clubs of America and other organizations concerned with the training and employment of motor vehicle repair and maintenance technicians.

Status:

The Automotive Service Councils of America and the National Automobile Dealers Association provided assistance in validating the personal characteristics list (Appendix H). The assistance consisted of supplying names and addresses of employers, or mailing the surveys to employers of automobile mechanics/technicians.

A general meeting was held at the American Vocational Association (AVA) conference December 6, 1980, in New Orleans. AVA has also expressed interest in the project activities and the proposed implementation modes for the project.

An article titled "Establishing Standards for Automobile Mechanic Training" was published in the Journal of the American Vocational Association, VocEd, Technical Insider November/December 1980, Vol. 55, No. 9.

The project coordinator presented a project update report to the State Directors of Vocational Education at their 1981 Spring meeting in Washington, D. C.

The project director presented seminars on the project at the National Association of College Automotive Teachers Conference July 28-29 in Houston, Texas; the Auto Repair, Inspection and

Maintenance Conference August 5-6 in Madison, Wisconsin, the Vocational Technical Education Consortium of States (V-TECS) Technical Coordinators Meeting September 18 in Charlotte, West Virginia; a statewide Vocational Coordinators Meeting September 30 in Minneapolis, Minnesota; the Texas Junior College Teachers Association Meeting March 7 in Houston, Texas; and the California Industrial Education Association Conference March 13-14 in San Jose, California.

Information was also distributed to other individuals and organizations too numerous to name here.

Task 7

Appoint an accreditation committee to act as the initial motor vehicle technician training program accreditation group.

Status:

An Executive Committee (Appendix K) was appointed and met May 21-23, 1981, in Atlanta, Georgia. Several items were on the meeting agenda of the committee, with finalization of the Program Standards the primary meeting goal. The comittee reviewed and modified the Program Standards and developed the basic criteria for program certification. The committee decided that the certification of program quality would be granted in one or more of the following specialist areas: (1) Front End, (2) Brakes, (3) Heating and Air Conditioning, (4) Engine Tune-up (including emission control system), (5) Automatic Transmission, (6) Electrical System, (7) Manual Transmission and Rear Axle, and (8) Engine Repair.

For certification to be granted to a program in any given specialty area(s) the program must provide theory instruction and hands-on experience for all "Basic" and "H.P." (High Priority) tasks in the specialty area(s). The program must also meet the other standards outlined in the AMTEP Program Standards (Appendix A).

Task 8

Develop several possible plans of action for the implementation of a national program for voluntary accreditation of motor vehicle mechanics training programs and submit the plans to sponsors by the end of April, 1981. One such plan could call for the establishment of the Motor Vehicle Technician Training Association. Such an organization would include, on a contributing basis, (1) those organizations providing training for automobile mechanics/technicians, (2) those organizations which employ the products of the training programs, and (3) those organizations concerned with the quality of training offered in both public and private training programs.

Status:

Several possible plans for project implementation were developed and submitted to the project sponsors. Copies of the plans are located in Appendix W.

Task 9

Publish Automobile Mechanic/Technician Training Program Standards Manual, Personal Standards Manual, Performance Standards for Automobile Mechanic Tasks, and Automobile Mechanic/Technician Training Program Evaluation Guide.

Status:

The following documents were submitted to the sponsor to be copyrighted and published:

1. Automobile Mechanic/Technician Training Program Standards Manual (Appendix A)

2. _Automobile Mechanic/Technician Training Program Evaluation Guide_ (Appendix B)
3. _Automobile Mechanic/Technician Training Program Self-Study Manual_ (Appendix C)
4. _Entry Level Employee Characteristics Important to Employers of Automobile Mechanics/Technicians - A Survey Report_ (Appendix H)
5. _A Task List with Performance Standards, A Tool List, and A Structural Guide for Automobile Mechanic/Technician Training Programs_ (Appendix V)

Task 10

Prepare end-of-year Report for MVMA.

Status:

This report is the result of this task.

VI

SUMMARY, OBSERVATIONS AND RECOMMENDATIONS

SUMMARY

The purpose of this project was to improve the quality of automobile service through the identification, development and validation of those performance, program, and personal standards judged necessary to operate and evaluate a quality automobile mechanic/technician training program.

The project had three phases, with Phase I starting on January 15, 1979. Phase I of the project included a state-of-the-art study to research existing materials dealing with performance and program standards. During this phase the first of four committees, the Performance Standards Committee (Appendix G), was appointed and met. This committee was responsible for synthesis of an automobile mechanic/technician task list (Appendix E), and the development of performance standards for the validated tasks (Appendix F). Phase I was relatively short — less than six months. Therefore, most of the activities dealt with organization and basic research in the standards area.

Phase II of the project began July 1, 1979, and included a variety of activities. During this phase, the Program Standards Committee was appointed and met (Appendix D). This committee drafted a set of Program Standards and related evaluation material for on-site program review (Appendices A, B, C).

This material was validated by pilot testing at thirty-two (32) nationwide sites during Phases II and III (Appendix Q). Twenty-six (26) different evaluators participated in the site visits (Appendix Q), and were trained in techniques of automotive training program evaluation. The primary validation of the program standards and evaluation materials was by feedback from experts, both team members and those at the pilot test sites. This feedback (Appendix O) was used in two of the three drafts, and the final set of standards and evaluation materials (Appendices A, B, C).

During Phase II, a sample of mechanics/technicians who had passed one or more of the National Institute for Automotive Service Excellence competency exams was surveyed to validate the task list developed by the Performance Standards Committee. Basic information needed for curriculum development and revision, the certifiable areas, and the specific tasks which must be covered in each specialty area for the area to be certified were identified in the task list (Appendix E).

The third project committee was the Personal Standards Committee which was appointed and met during Phase II (Appendix I). This committee developed a list of "desired personal characteristics" of an entry level automobile mechanic/technician (Appendix H). This list was validated by a sample of employers of automobile mechanics/technicians. The employers surveyed were members of the Automotive Service Councils, Inc. (ASC) or the National Automobile Dealers Association (NADA).

Phase III of the project, July 1,1980, through June 30, 1981, included the final validation of the project materials. During this time period, the survey returns were calculated, and all of the project activities and materials completed.

The products of the project include:

1. Automobile Mechanic/Technician Training Program Standards Manual (Appendix A)
2. Automobile Mechanic/Technician Training Program Evaluation Guide (Appendix B)

3. Automobile Mechanic/Technican Training Program Self-Study Manual (Appendix C).
4. Entry Level Employee Characteristics Important to Employers of Automobile Mechanics/Technicians - A Survey Report (Appendix H).
5. A Task List with Performance Standards, A Tool List, and A Structural Guide for Automobile Mechanic/Technician Training Programs (Appendix V).

The products will be used to evaluate and improve the quality of automobile mechanic/technician training programs, with some of the possible uses listed here:

1. Providing current job related data for planning and implementing performance based automobile mechanic/technician training programs.
2. Providing lists of tools and equipment for use in program planning and facility development.
3. Providing a guide for evaluating an automobile mechanic/technician training program.
4. Providing a competency basis for evaluating learner progress.
5. Facilitating the process of program planning and evaluation by making the identification of specific program goals easier.
6. Aiding in planning and implementing articulation between programs.
7. Providing core content for revising or developing programs.
8. Assisting in the identification of program prerequisites.

9. Providing a basis for developing criterion-referenced performance test items.
10. Providing a basis for instructor-developed student material.
11. Providing a standard of task performance.
12. Providing a basis for evaluating learner's competency achievement.
13. Listing automotive specialty service areas and tasks which must be covered in those areas for certification.

Observations:

The primary purpose of the project was to identify and validate standards in various areas. The purpose was not to assess the state or quality of existing automotive training in the United States. One of the validation activities, however, did involve visiting more than 30 institutions with automotive training programs. These institutions included secondary, post-secondary, (both degree and non-degree granting institutions) and a proprietary automotive training program. During the review of the evaluation team reports several problem areas were consistently mentioned, and these concerns need to be addressed.

Each program was reviewed relative to its stated objectives and goals, the draft program standards and observable indicators. It must be emphasized that all schools did not have the same perceived problems. The observations, however, do indicate areas of concern common to many of the institutions. Each item relates directly to the standards and evaluation materials (Appendices A, B, C) used during the pilot test site activities. If the activities, materials and support areas outlined in the standards are what should be expected in a quality program -- and our validity study does not indicate otherwise -- then the following observations are indeed cause for concern.

.Hard data which gives the percentage of students placed as automobile mechanics/technicians is either not available or not collected through formal surveys.

Training for employment in the automotive service industry must be the primary goal of any program which purports to be vocational in nature. The problem with using placement as an indicator of quality however, (especially in automotive programs) is that in many cases the student is not in the program with his/her goal being employment in the automotive service industry. The student's goal may be to learn more about the automobile so as to be able to repair his/her own vehicle. Obviously, if this is the hidden or stated goal, then placement is a moot point.

In instances where the program is vocational, however, placement is an important indicator of program quality. If no or few completors are being placed, it is an indicator of a major problem.

.Program goals are ambiguous, not indicating if the program is preparation for employment, an associate degree, or is a "know your car" course.

For a program to have direction, goals and objectives need to be stated. If the goals are ambiguous, then the basis for evaluation of the program procedures and results is simply not there. The adage of "any road being the correct road if you don't know where you are going" applies here.

Prospective students and the public need to know what training the program will provide — the student, so he/she does not waste time and money on training for an occupation of which he/she has little knowledge; the public (taxpayer), so they will have an idea how their money is being spent.

.Information on the program is scattered, with no single document relating all information relative to the program.

This item relates to the previous one, in that a potential student may or may not receive all the information on the program. The program needs one document including specific information about the program which is given to each potential student.

.Advisory committee structure, meeting content and attendance is marginal.

The advisory committee (or craft committee as it is sometimes called) is the primary source of industry input to the program. The advisory committee must be more than a rubber stamp social group. The membership must include active automotive service industry representives such as mechanics/technicians, service managers, employers, and former students now employed in the industry. This group also provides good public information on the program to those who may not be aware of its existence.

.Students with low reading levels are being admitted to programs. No pre-testing or remedial activities are conducted to raise reading abilities to the level needed for text and service manual comprehension.

The lack of students' ability to read in today's highly technological society may be the biggest problem facing the automotive service industry. In a time of change such as we are now experiencing, it is imperative that the technician be able to read and interpret service manuals and technical bulletins, and apply that knowledge during vehicle maintenance, diagnosis and repair. Counselors can no longer say—"If a student doesn't like academics (Reading, Math, English), then he/she will like to work with his/her hands." Counselors and instructors must make students aware of the complexity of the field, and the need for good reading skills in order to be successful as an automotive technician. This is not to say that non-readers cannot be involved in the automotive service industry. They can. If they cannot read, however, they will be limited in the tasks they can competently perform.

Those in the automotive program who cannot read must be remediated so they can have a reasonable expectation of success in the field. This can be in conjunction with the training, or prior to entry into the program, depending on the severity of the problem.

This need cannot be over emphasized. For today's and tomorrow's mechanics/technicians to be successful, the ability to read is mandatory.

.Student placement systems are limited to informal contacts of the instructors with the employment community.

The instructor is the primary source of employment information. His/her major responsibility is day to day instruction, however, so a formal placement system should be available for student use. Once again, placement in the occupation must be the primary goal of the vocational institution and program.

.Follow-up systems are either non-existent or inadequate, not providing useful information for program revision and updating.

The ultimate use of a follow-up system is to determine the success of program completors. This information will either validate existing activities or provide indication of needed areas of change. This is a difficult activity to maintain, but if properly administered, will certainly improve the quality of the program and support activities such as counseling and placement.

.The use of a list of specific tasks is limited.

A validated, up-to-date list of tasks that automobile mechanics/ technicians are required to perform on the job is the basic component of a curriculum. Through the use of a task list, the specific tasks a student needs to know how to competently perform to be employed can be identified. The use of a task list provides a ready means of determining student progress. As the student demonstrates competency in task performance, he/she can be "checked off" on that task and move on to the next requirement.

The task list also provides a method of "mapping" the route a student will need to cover in reaching his/her goal. The goal may be entry level or competence in a specialty area such as brakes, front end or other.

Task lists also provide a degree of insight as to the complexity of the vehicle. This can be helpful when counselors confer with students, emphasizing the need for highly qualified individuals in the occupation.

A task list was developed and validated by the AMTEP. The tasks that must be covered in each specialty area for certification of quality are identified as "H.P." (High Priority). This task list, as all task lists, must be updated on a regular basis. (Appendix E)

- The curriculum is not performance based, due to the lack of a task list (the basic component for performance based instruction). Specific performance standards are not identified and shared with students prior to and during training.

The majority of automotive training is (as it has always been) developed by the intructor who "knows" when a task has been competently performed. This is not to say the instructors do not know when a task is competently performed, only that the required level or degree of competency may vary from student to student. Unfortunately, this means that the student only knows in general terms what a competent level of performance is, and what he/she will need to do to meet the mastery level.

In an attempt to alleviate this problem, performance standards were identified for the tasks validated during the AMTEP. These performance standards (Appendix F) provide the basic component for a performance test to determine student competency. The performance test can be developed at the local level, thereby reflecting the local facilities, tools and other environmental constraints.

- Safety instruction, with a safety test as an indicator of competency, is limited or non-existent.

It is nearly impossible to over-emphasize safety in the training environment. Students must be aware of the potential hazards found in the automotive shop, and the precautions they must take. Safety instruction followed by a test which requires a perfect score before attempting live shop work is a must. Less than a perfect score leaves the possibility open that the item(s) missed will be the ones causing injury or death.

A series of tests is the best answer to the problem. The first test would be general, covering the facility, tools and equipment the student will initially encounter. Then, a test at the beginning of each new area, quarter, semester or other time period covering a new system of the vehicle. These tests would be a combination of previous general concerns and added hazardous areas not previously encountered.

.Cars owned by the students in the training program
are used as the primary source of live work.

The use of the automotive students own vehicles as the primary source of live work is a problem in the following sense. Unless extremely well controlled, this practice can lead to a "hobby shop" situation, wherein the student is constantly tinkering with his/her car. If specific tasks are identified that the student is responsible for performing, then his or her own vehicle could be used during training. Once again, this practice requires close control, or it can get out of hand.

All live work entering the shop must have a work order completed and on the vehicle. This is a primary control and time keeping record. With the use of a work order system, a problem with excessive time on a task (job) can be recognized and corrected. The use of the work order also provides a close replication of the real world in which the student will work.

Use of the general student population's vehicles as a source of live work is encouraged. Adequate liability releases must be used, however, and customers must realize that the work is done by students for training purposes.

.No preventative maintenance programs for tools and equipment are being used to decrease down time.

The use of a preventive maintenance program with the students assuming primary responsibility will help keep equipment operational, and provide training which will be useful to the students and their employers. As costs continue to escalate, this will become even more important.

.Tool and equipment replacement schedules are not being used for future planning.

The projection of expected replacement requirements will aid the program in the provision of state-of-the-art training. This activity also helps alleviate "budget surprises" when equipment is worn out. As costs increase, some programs may have to decrease their offerings due to lack of equipment. Preventive maintenance and planning will help alleviate this problem.

.There is inconsistency in requiring the students to have their own hand tool set.

Some programs required the student to have a complete basic tool kit on the first day of the course, some required tools by the third week, and some supplied all the tools to the student. Some programs said they could not require that tools be provided by the student, some said they didn't want the student bringing in his/her own tools, and some had a limited selection of tools available, with the student bringing in his/her own or borrowing from others. The required tool sets cost from approximately $600 down to "bring whatever you have." A major problem (even with the required sets) was the lack of supplementary metric sockets, wrenches and other small metric tools. Today, the mechanic/ technician must have both types.

Ninety percent (90%) of the employers responding to the personal characteristics survey (Appendix H) indicated that entry level employees needed a hand tool set to be employed. This means that in most of the shops, the potential employee must have a tool set to be employed. Tool ownership will also help develop a sense of pride in ownership.

.Certification (by a nationally recognized agency) of instructors technical competency is lacking.

Many instructors were not certified by the National Institute for Automotive Service Excellence (NIASE) (which certifies automobile service mechanics/technicians as being competent). Instructors did, however, have the required educational certification.

As an indicator to students and the public that automotive instructors are technically competent, they should hold current NIASE certification in at least the vehicle systems they teach. It is preferable, however, that they be certified in all eight (8) areas as a general mechanic. If automotive training is to be high quality, (and it must be to be certified as such) then the instructors must also exhibit quality. NIASE certification does not insure competence, but it is the only nationally recognized indicator of automobile mechanic/ technician competency.

All instructors did, however, hold the state required instructional certification. (It needs to be emphasized, however, that in some states no state instructional certification is required to teach in a community or junior college.)

.There are limited instances of an incentive system used to encourage instructors to return to industry for in-service and benefical skill upgrading.

Technical competency of instructors in state-of-the-art automotive systems is mandatory. The technology being applied to the automobile (micro-processors, new materials, front wheel drive systems) requires that the people responsible for training mechanics and technicians be aware of and competent in the theory and service of new technologies. This type of in-service is so critical that the institution salary scale should reflect benefical technical in-service improvement on an equal basis with return to college for credit. Incentive systems must be developed where none exist to provide impetus for technical up-grading. Unfortunately, automotive instructors' (in some instances) technical knowledge is woefully out dated, reflecting automotive systems of the 60's and early 70's. This is simply not adequate.

.Few programs have operational cooperative or apprenticeship programs.

As a method of developing skills and knowledge, these types of training are very valuable. The student is in the work place, experiencing the environment and tasks he/she will experience upon completion of training. The theoretical can be handled in the formal structure and the practical, on the job. Too few programs emphasize this type of training.

.Few formal articulation plans are in operation.

Duplication of effort is wasteful, both in time and money. Much work needs to be done in this area, but it can only be accomplished when the tasks and performance standards are widely accepted. If the institution (personnel) can agree on these items, and training is performance based, then articulation can occur.

If the receiving institution finds that entering students cannot perform the tasks the sending institution indicates they can, then articulation will not happen. Both the student and the public are then the losers. The student repeats tasks he/she may not need to repeat, and the public pays for the facility and personnel to provide the repeated task training.

RECOMMENDATIONS:

The primary recommendation is that a system, agency, or operating arm of an existing organization use the materials and procedures developed by the AMTEP to assess, certify and improve the quality of automobile mechanic/technician training programs. This recommendation is made with the following assumptions in mind:

-The evaluation materials and procedures developed by AMTEP will provide a method of differentiating between programs of higher and lower quality.

-The evaluation materials, procedures and other program development materials are dynamic. These materials will/should be continuously updated/upgraded as automotive technology changes and new evaluation techniques are known.

-Few programs applying for membership and evaluation will be certifiable in all eight specialty repair areas. The majority of programs will be certified in one or more of the areas such as automatic transmission, electrical systems or other, similar to the existing certification system for mechanics.

The goals of the certification agency should include, but not necessarily be limited to the following:

-To improve the quality of motor vehicle technician training through a formal program evaluation and certification process.

-To certify the quality of motor vehicle technician training programs and provide services such as occupational analysis and updating, text and curriculum review and other support activities to certified training programs.

-To serve as an industry-training link.

The general responsibility of any group chosen to implement the Automobile Mechanic/Technician Training Evaluation and Certification Program include, but are not limited to, the following activities:

1. Print and disseminate the materials developed and validated during Phases I, II and III of AMTEP.
    a. The Phase III AMTEP report.
    b. A Task List with Performance Standards, A Tool List and A Structural Guide for Automobile Mechanic/Technician Training Programs.

   c. Automobile Mechanic/Technician Training Program Standards Manual.

   d. Automobile Mechanic/Technician Training Program Evaluation Guide.

   e. Entry Level Employee Characteristics Important to Employers of Automobile Mechanics/Technicians - A Survey Report.

2. Act as liaison between the automotive service and production industry and automotive training programs.
3. Coordinate program self-study and on-site verification activities.
4. Promote the concept of improved service to the consumer and industry through the improvement and certification of training programs.
5. Promote apprenticeship and cooperative training as a means of improving the quality of training through on-the-job experience.
6. Increase potential technicians' awareness of opportunities in the industry through the media and public school counselors' organizations and meetings.
7. Act as liaison with the existing accrediting and certifying agencies.
8. Establish a functioning, on-going operation to certify automotive training programs.
9. Work toward financial independence from outside organizations/agencies.

10. Maintain contacts with the automobile manufacturing industry, dealer groups, independent service organizations and after-market suppliers.

11. Maintain close contact with the National Institute for Automotive Service Excellence (NIASE) for unification of activities given the commonalities of goals.

The final decision has not been made as to the implementation process to be followed. As of the date of this report, several agencies had been contacted by the IPC and MVMA, but no organization had assumed responsibility for implementation.

APPENDIX

APPENDIX A

PROGRAM STANDARDS

-AMTEP-

AUTOMOBILE MECHANIC/TECHNICIAN TRAINING PROGRAM

STANDARDS MANUAL

Copyright MVMA, 1981

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PROGRAM STANDARDS

INTRODUCTION

These standards for automobile mechanic/technician training programs were developed by the Automobile Mechanic Training Evaluation Project (AMTEP) staff under direction of the AMTEP Program Standards and Executive Committee (Appendix A and B).

AMTEP was a 2 1/2 year developmental project sponsored by the Motor Vehicle Manufacturers Association of the United States, Inc., (MVMA)*. The goal of the project was to develop and validate standards to be used for the improvement of automotive service to consumers through the improvement of automobile mechanic/technician training programs.

Standards were identified and validated in three areas: 1) Program Standards, 2) Performance Standards, and 3) Personal Standards. The Performance Standards are in a publication titled, A Task List with Performance Standards, A Tool List and A Structural Guide for Automobile Mechanic/Technician Training Program. This publication also includes a validated task list and identifies the tasks in a specialty service area which must be covered for certification.

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*MVMA Members include: American Motors Corporation, Checker Motors Corporation, Chrysler Corporation, Ford Motor Company, Freightliner Corporation, General Motors Corporation, International Harvester Company, Mack Trucks Inc, PACCAR Inc., Volkswagen of America, Inc., White Motor Corporation.

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The Personal Standards (characteristics) are in a report titled Entry Level Employee Characteristics Important to Employers of Automobile Mechanics/Technicians. The characteristics in this report were validated by employers, and must be considered in the development and operation of the automotive program.

The goal in developing these Program Standards was to define the characteristics of a quality automobile mechanic/technician training program, through the identification of elements that are essential for excellence.

Two other manuals are used in conjunction with these Program Standards. The first of these is the Automobile Mechanic/Technician Training Program Self-Study Manual. This manual is used by a program in preparation for the program certification review, and can also be used as a guide for program improvement. The second publication is used by the evaluation team during the on site visit and is the Evaluation Guide for Automobile Mechanic/Technician Training Programs. The guide contains the same evaluation items as the self-study manual, with the introduction and instructions the only difference. Using this structure, the program personnel are able to identify and collect the specific materials the visiting team will review. This is a type of "criteria referenced" evaluation, wherein the specific standards and criteria are specified before the actual evaluation begins.

For further information on the AMTEP
project and these materials, see the
AMTEP Final Report, 1981, or contact
____________________________________.

GLOSSARY OF TERMS

1. CURRICULUM: All the objectives, content, and learning activities arranged in a learning sequence for a particular instructional area. An orderly arrangement of integrated subjects, activities, and experiences which students pursue for the attainment of a specific educational goal.
   From - What is Competency Based Vocational Education-CBVE?
   Maryland Vocational Curriculum Production Project, 1978.
2. COMPETENCY (Hands on) - Performance of a task to the level or degree specified in the performance standard for the task.
3. CRITERION REFERENCED MEASURE(S) - An exercise based on a performance objective for a task, and designed to measure attainment of that objective. (Also called performance test(s) or criterion referenced test)
4. GOAL - A statement of the intended outcome of participation in the training program.
5. LIVE WORK - The processing, assignment and student performance of the appropriate diagnosis, rebuild or replacement tasks on street legal vehicles.
6. MASTERY - (See competency - Hands on)
7. OBJECTIVE, PERFORMANCE - A written statement describing an intended outcome (competent task performance) in terms of student performance. (Also called "behavioral" objective or instructional objective)-R. F. Mager Associates, 13245 Rhoda Drive, Los Altos Hill, California
8. PERSONAL CHARACTERISTIC - Attributes which are not readily measurable, and are generally in the affective or cognitive domains.

9. SPECIALTY/SPECIALIST AREA(S) - Relates to one or more of the following eight areas: (1) Front End, (2) Brakes, (3) Heating and Air Conditioning, (4) Engine Tune-up (including emission control systems), (5) Automatic Transmission, (6) Electrical Systems, (8) Manual Transmission and Rear Axle, and (8) Engine Repair.

10. STANDARD - "...Something established for use as a rule or basis of comparison in measuring quantity, quality, value, etc..." Websters New World Dictionary (1973)

11. STANDARD PERFORMANCE - A written specification of the results of acceptable task performance.

12. STANDARD, PERSONAL - An attribute or characteristic of an individual which facilitates entry into and advancement in an occupation.

13. STANDARD, PROGRAM - A specific quality or desired characteristic of a training program designed to prepare individuals for employment.

14. TASK - A task (statement) describes a unit of work activity which has an identifiable beginning and ending point in its accomplishment, and consists of two or more observable steps.

15. TRAINING STATION - An area with appropriate tools and equipment, large enough to allow safety and competency development in task performance.

****

Must or shall is an imperative need, duty or requirement; an essential or indispensable item; mandatory.

Should is used to express a recommendation, not mandatory but attainment would increase program quality.

May or could expresses freedom to follow a suggested alternative.

July, 1981

-PROGRAM STANDARDS-

STANDARD 1 - PURPOSE

THE AUTOMOBILE MECHANIC/TECHNICIAN TRAINING PROGRAM MUST HAVE CLEARLY STATED PROGRAM GOALS, RELATED TO THE NEEDS OF THE STUDENTS AND EMPLOYERS SERVED.

1.1 EMPLOYMENT POTENTIAL

The employment potential for automobile mechanics/technicians, trained to the level and for the specialty or generalist areas outlined in the program goals should exist in the geographic area served by the program.

1.2 PROGRAM DESCRIPTION/GOALS

The written description/goals of the program must be shared with the potential student and must include admission requirements, employment potential, area(s) of specialty training offered, and the cost of all tuition and fees. Technical qualifications of the faculty and the overall goal(s) of the program must also be included.

STANDARD 2 - ADMINISTRATION

PROGRAM ADMINISTRATION MUST INSURE THAT INSTRUCTIONAL ACTIVITIES SUPPORT AND PROMOTE THE GOALS OF THE PROGRAM.

2.1 STUDENT COMPETENCY CERTIFICATION

The certificate or diploma a student receives upon program completion must clearly specify the area(s) of demonstrated competency. (See Standard 6.5, Curriculum.)

2.2 CHAIN OF COMMAND

A line and staff structure should be used, indicating responsibilities for instruction, administration, and support services.

2.3 ADMINISTRATIVE SUPPORT

Postive administrative support from institutional and local governing bodies must be demonstrated. (Support for staff in-service training and provision of appropriate facilities, up-to-date tools, equipment and training support materials would be appropriate indicators.)

2.4 WRITTEN POLICIES

Written policies should be adopted by the administration and policy board for use in decision making situations, and to provide guidance in achieving the program goals. Policies regarding safety, liability and shop operation should be written and prominently displayed, and provided to all students and instructors.

2.5 ADVISORY COMMITTEE

An Advisory Committee must convene at least annually and be utilized to provide counsel, assistance, and information from the community served by the training program; this committee must be broadly based, and include former students, an employed mechanic/technician, employers, and representatives of consumer's interests.

2.6 PUBLIC/COMMUNITY RELATIONS

An organized plan may be used to provide the community at large information regarding the training program, its graduates, its plans, and any services provided to the community.

2.7 LIVE WORK ACCOUNTING

A systematic method of collecting, accounting for, and disbursing live work repair receipts must be used. Instructional staff must not be required to collect payment for live work repairs.

STANDARD 3 - LEARNING RESOURCES

SUPPORT MATERIAL CONSISTENT WITH BOTH PROGRAM GOALS AND PERFORMANCE OBJECTIVES MUST BE AVAILABLE TO STAFF AND STUDENTS.

3.1 SERVICE MANUALS

Manuals with current manufacturer's service procedures and specifications for vehicles manufactured within the last ten (10) years must be available. These manuals must be located where students can use them while working in the shop area.

3.2 MULTI-MEDIA

Appropriate up-to-date multi-media materials such as flip charts, tape slides, motion pictures, overhead transparency and video projection media should be decentralized and readily available wherever possible and utilized in the training process.

3.3 INSTRUCTIONAL DEVELOPMENT SERVICES

The service of professional instructional development personnel should be used when available. At a minimum, equipment and supplies should be available for duplication of printed material and overhead projector transparency development. Instructional development personnel should conduct in-service and/or training in curriculum and media development on a structured basis.

3.4 PERIODICALS

Current general and technical automotive magazine and newspapers must be available for student and instructor use.

3.5 STUDENT MATERIALS

Necessary instructional texts or pertinent material must be available for each student to satisfy the objectives of the mode of instruction used. Where textbooks are used, specialized texts must carry a copyright date no older than 3 years and basic texts no older than 6 years.

STANDARD 4 - FINANCES

FUNDING MUST BE PROVIDED TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

4.1 PROGRAM ENROLLMENT

The enrollment in the program or program area should be sufficient to keep the per-student training costs to a realistic figure.

4.2 BUDGET

An adequate annual budget must be developed, allocated and utilized for operation of the program.

4.3 BUDGET PREPARATION

The budget should be prepared by the institutional administration in conjunction with the program faculty.

4.4 STATUS REPORTS

Budget status reports should be made available to program staff, at least quarterly.

STANDARD 5 - STUDENT SERVICES

SYSTEMATIC PRE-ADMISSION TESTING, INTERVIEWS, COUNSELING SERVICES, AND PLACEMENT AND FOLLOW-UP PROCEDURES MUST BE USED.

5.1 PRETESTING

A formal pretesting program must be used to assess a student's abilities in reading, mathematics, and manipulative skills to evaluate and assure the student a reasonable probability of success as an automobile mechanic/technician. Testing procedures must be stated in program explanatory material and justification for all requirements must be available.

5.2 PREADMISSION INTERVIEWS

Prior to program admission, a student must be interviewed and approved for admission by the counselor and department head and/or instructor(s).

5.3 STUDENT RECORDS

Permanent records of former students of the program must be available in one central location.

5.4 PLACEMENT

A systematic student placement system must be used to assist program graduates to obtain employment in the automobile service industry.

5.5 FOLLOW-UP

A follow-up system should be used to determine students' employment location and for feedback regarding the efficiency, effectiveness and appropriateness of training. The follow-up procedure should be designed to assure feedback regarding needed additions or deletions to the training curriculum, training program, and tool and equipment types compared to those found in industry. Follow-up of program graduates should indicate reasons for employment outside of the automotive service industry. When applicable, this information should be used to modify the training program quality and/or content.

5.6 LEGAL REQUIREMENTS

The training program must meet all applicable local, state, and federal requirements.

STANDARD 6 - INSTRUCTION

INSTRUCTION MUST BE SYSTEMATIC AND REFLECT PROGRAM GOALS. A TASK LIST AND SPECIFIC PERFORMANCE OBJECTIVES WITH CRITERION REFERENCED MEASURES MUST BE USED.

6.1 PROGRAM PLAN

The training program must progress in logical steps, and provide for alternate sequences where applicable.

6.2 STUDENT TRAINING PLAN

A training plan for each student must be used, indicating the student's training goal(s) and specific steps needed to meet that goal. Each student must be given a copy of his/her training plan.

6.3 PREPARATION TIME

Adequate time should be provided for teacher preparation and program development and/or modification.

6.4 TEACHING LOAD

The instructor/student ratio and class contact hours should allow time for interaction on a one-to-one basis.

6.5 CURRICULUM

(a) The automobile diagnosis, service, and repair tasks designated "high priority" (H.P.) in the AMTEP Task List (1981) must be included in each certified area of automobile service instruction. Additional tasks may be added to meet the needs of local employers. All additional tasks must be approved by the program advisory committee.

(b) The curriculum must provide training for one or more of the following speciality areas: (1) Front End, (2) Brakes, (3) Heating and Air Conditioning, (4) Engine Tune Up (Including emission control systems), (5) Automatic Transmission, (6) Electrical Systems, (7) Manual Transmission and Rear Axle, (8) Engine Repair.

(c) Instruction on the legal aspects and responsibilities of the automobile mechanic in areas such as Environmental Protection Agency regulations, safety regulations, OSHA regulations, and other appropriate requirements must be included in the curriculum. Instruction and practice in filling out work order forms, ordering parts and basic record keeping must be a part of the training program.

6.6 STUDENT PROGRESS

A record of each student's progress should be maintained through use of a progress chart or other recording device. The record should indicate tasks required for mastery in the area and those tasks the student has mastered.

6.7 PERFORMANCE STANDARDS

All instruction must be performance based, with an acceptable performance standard stated for each task. These standards must be shared with students and potential employers. Students must demonstrate "hands on competency" or "mastery" of a task before the instructor verifies student's performance.

6.8 SAFETY STANDARDS

Safety instruction must be given prior to shop work and be an integral part of the training program. A safety test must be included in the training program. Eye protection must be worn in the shop area.

6.9 PERSONAL CHARACTERISTICS

All training activities and instructional material must emphasize the importance of maintaining high personal characteristics as identified in the AMTEP Personal Standards.

6.10 WORK HABITS/ETHICS

The training program must be organized in such a manner that work habits and ethical practices required on the job are an integral part of instruction.

6.11 PROVISIONS FOR INDIVIDUAL DIFFERENCE

The training program should be structured in such a manner that students with different levels of cognitive and psychomotor skills can be accommodated.

6.12 RELATED INSTRUCTION

Instruction in related mathematics, communication, and interpersonal relations should be provided and coordinated with ongoing instruction in the training program. This instruction shall be provided by a qualified instructor.

6.13 TESTING

Both written and performance based tests must be used to validate student competency. Students should be encouraged to take certification tests that are publicly recognized indicators of capabilities.

6.14 EVALUATION OF INSTRUCTION

Instructional procedures must be evaluated in a systematic manner. This evaluation must be through regular reviews by students and the administration. Self evaluation of instruction must also be utilized on a systematic and regular basis. The system must also include input from former students and advisory committee members. Instructional procedures must show a responsiveness to the feedback from these evaluations.

6.15 LIVE WORK

Live work must be scheduled to benefit the student and supplement ongoing instruction. A student must have had instruction and practice on a specific repair task before live work requiring that task is assigned. Vehicles owned by students in the automobile mechanic training program and school buses or other vehicles owned or operated by the governing body or administrative personnel must not be the primary source of live work projects. All vehicles in the shop must have a completed industry type work order attached to or in the vehicle.

6.16 ARTICULATION

Agreements between programs with equivalent competencies should be used to eliminate unncessary duplication of instruction.

STANDARD 7 - EQUIPMENT

EQUIPMENT AND TOOLS USED IN THE AUTOMOBILE MECHANIC/TECHNICIAN TRAINING PROGRAM MUST BE OF THE TYPE AND QUALITY FOUND IN THE REPAIR INDUSTRY AND MUST ALSO BE THE TYPE NEEDED TO PROVIDE TRAINING TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

7.1 SAFETY

Equipment and tools used in the training program must have all shields, guards, and other safety devices in place, operable and used.

7.2 TYPE AND QUALITY

The tools and equipment used in the training program must reflect the program goals and performance objectives.

Sufficient tools and equipment must be available on site for training offered. The tools and equipment must meet industry quality standards.

7.3 CONSUMABLE SUPPLIES

Sufficient consumable supplies should be readily available to assure continuous instruction.

7.4 MAINTENANCE

A preventative maintenance schedule should be used to minimize equipment down-time.

7.5 REPLACEMENT

A systematic schedule for replacement should be used to maintain up-to-date tools and equipment at industry and safety standards. Student follow-up and advisory committee input should be used in this system.

7.6 INVENTORY

An inventory system should be used to account for tools, equipment, parts, and supplies.

7.7 PARTS PURCHASING

A systematic parts purchasing system -- from work order to parts man to jobber -- should be used. Task performance should not be unreasonably delayed due to a lack of replacement parts.

7.8 HAND TOOLS

Each student must have a basic hand tool set comparable to tools required for employment. The students must be encouraged to purchase a hand tool set during the period of instruction, appropriate to the auto specialty area(s) in which he/she is being trained.

STANDARD 8 - FACILITIES

THE PHYSICAL FACILITIES MUST BE ADEQUATE TO PERMIT ACHIEVEMENT OF THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

8.1 TRAINING STATIONS

Training stations (bench and live work) must be available in the type and number required for the performance of tasks outlined in the program goals and performance objectives.

8.2 SAFETY

The facilities must meet all applicable safety standards.

8.3 MAINTENANCE

A regular facilities maintenance program should be used to assure facilities are suitable when required for instruction.

8.4 HOUSEKEEPING

The classroom, shop, and support area(s) should be kept clean and orderly.

8.5 OFFICE SPACE

An area separate from the shop must be available and convenient for the instructor(s) use as an office.

8.6 INSTRUCTIONAL AREA

A classroom convenient to but separate from shop area must be available for instruction and other non-shop activities.

8.7 STORAGE

Storage areas for tools, parts, supplies, and automobiles must be sufficient to support the activities outlined in the program goals and performance objectives. Security must be provided to prevent pilferage and vandalism.

8.8 SUPPORT FACILITIES

Restrooms, clean up areas and lockers must be provided convient to the instructional area.

8.9 VENTILATION

An adequate exhaust fume removal system must be in place and operable. When appropriate, heating and cooling systems should be used to provide sufficient comfort for learning.

8.10 FIRST AID

A first aid station must be in place, well marked, and complete with appropriate supplies.

8.11 FACILITY EVALUATION

The Advisory Committee shall conduct an annual evaluation of the facilities to assure adequacy to meet program needs.

STANDARD 9 - INSTRUCTIONAL STAFF

THE INSTRUCTIONAL STAFF MUST HAVE TECHNICAL COMPETENCY AND MEET ALL STATE AND LOCAL REQUIREMENTS FOR CERTIFICATION/CREDENTIALING

9.1 TECHNICAL COMPETENCY

Instructor(s) must have demonstrated technical competency and must hold current, nationally recognized certification in the automotive specialty service area(s) taught.

9.2 INSTRUCTIONAL COMPETENCY/CERTIFICATION

Instructors must meet all state certifying requirements.

9.3 TECHNICAL UPDATING

Faculty members must be provided technical materials required to maintain their competency. An opportunity must be provided for instructor(s) to return to industry on a regular basis for in-service and skill upgrading

9.4 FIRST AID

The instructor(s) should hold a current American National Red Cross Standard First Aid Certificate.

9.5 SUBSTITUTES

A systematic method of obtaining "substitute" or "supply" instructors should be used to assure instructional continuity. An orientation session for substitutes should be held on a regular basis. The substitute should be a competent automotive instructor.

STANDARD 10 - COOPERATIVE AGREEMENTS

WRITTEN POLICIES AND PROCEDURES MUST BE USED FOR COOPERATIVE AND APPRENTICESHIP TRAINING PROGRAMS.

10.1 STANDARDS

Student performance standards should be developed and coordinated by the supervising instructor.

10.2 AGREEMENTS

All agreements should be written and legally binding.

10.3 SUPERVISION

A supervising automotive instructor must be assigned responsibility, authority and time to coordinate and monitor cooperative/apprenticeship automotive programs.

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APPENDIX B

EVALUATION GUIDE

EVALUATION GUIDE

FOR

AUTOMOBILE MECHANIC/TECHNICIAN

TRAINING PROGRAMS

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INTRODUCTION

This evaluation guide for automobile mechanic/technician training programs was developed by the Automobile Mechanic Training Evaluation Project (AMTEP) staff with the guidance of the AMTEP Program Standards and Executive Committee. This guide is designed to assist evaluation team members prior to and during the on site visit. The first section of the guide covers on site evaluation procedures, and the second section delineates specific items to be reviewed during the team visit. Each review item relates to a standard in the companion document, AMTEP Automobile Mechanic/Technician Training Program Standards Manual.

INSTRUCTIONS TO THE EVALUATOR

As a program evaluator, your primary responsibility is assessing how well a program meets the certification requirements outlined in the AMTEP Program Standards. Given that certification may be in one or more of the specialty areas covered in standard item 6.5-A, Page 9, the curriculum, facility, and tools and equipment will need to be verified for each area. To assist you, specific questions relating to each of the standard items have been developed, and are included in this evaluation guide. You will be assigned specific standards to review, but should communicate with the other team member for his/her opinion on questionable items.

Please review the items in this guide to see how they relate to the standard items in the companion document, AMTEP Automobile Mechanic/Technician Training Program Standards. (If you have questions about these items, write them down and request clarification by the AMTEP staff representative.)

During your review of the program look at each evaluation guide item relative to the stated goals of the program, the area(s) to be certified, and any available evidence (written, physical, etc.) that will assist you in reaching conclusions as to how well that standard or substandard is met. If in your judgement, the standard or substandard is met, check it YES, and no comment is required on the standard. If a program is outstanding or has an innovative approach in an area, note that fact. If your evaluation of the program relative to a standard is "YES, but..."; "NO, but..."; or NO; then describe your observations in your written report.

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As an example, one area in which the program may be seeking certification could be Automatic Transmission Specialist. Item (7.2-A) states the question, "Are the tools and equipment needed to provide training in each area to be certified available in the shop area?" To answer questions such as this, you must look for evidence (the tools and equipment) and if you can't see it, ask the faculty to show you the appropriate material to verify your response. If the appropriate materials are not available, you must answer NO to that item on your interview guide. In your oral and written report the seriousness of the discrepancy (NO or NO, but...) can be stated. This may or may not be the only negative response relative to areas in which the program is seeking certification. You must determine this by comparing the program goals and self-study response with the available evidence and making a decision.

When the guide item asks for a percent, list, or other information, include this information in the space provided and in your written report.

If the standard item is not clear, either to you or to the instructional staff, make a note of this for clarification.

Finally, compare your response with that of the program staff as recorded on the self evaluation instrument. If a discrepancy exists, you must talk to the instructional staff to determine why they answered one way and you another.

Among the methods you will use to determine how well a standard is met are the following:

- .Interviews with teachers, administrators, students, former students, counselors, employers and advisory committee members;
- .Examination of records relating to those standard areas for which records are available;
- .Review of the task list and curriculum materials;
- .Review of the tools and equipment;
- .Observation of instructional practices.
- .Review of the facility.

As you go through your assigned standard areas, make notes on each item. On the evening of the first day, the team will meet informally to determine the status of their work and plan for the second day. At this time, notes will be compared and the status of the team's activities will be assessed. The team will then go back to the school on the second day and complete the program review. Upon completion of the activities, probably in the early afternoon, each team member will give an oral report to the administration and instructional staff on their observations relative to each of the assigned standards.

During the oral report to the faculty and administration at the end of the visit, you will report your observations, conclusions, and recommendations. This information must also be included in your written report submitted to the AMTEP staff for development of the final written report.

The recommendations you make will indicate that a goal with a major discrepancy be dropped from the written program description, or appropriate tools, equipment, and "high priority" tasks (be specific) be included so the standard can be met. Remember, the program certification states that the students receive theory instruction and hands-on training in this program for the High Priority (H.P.) tasks in a specific specialty area(s). The certification also indicates that the support functions are adequate for the areas being certified.

The oral report (due to time constraints) should only include those standard items which are deficient and those areas which are exemplary. At this time, administration and faculty will be encouraged to express their views on the items under discussion. Therefore, for any statements you make, you must have evidence which will support your observations and recommendations on the standard under discussion.

After the visit, you will submit an informal written report to the staff representative on the status of each standard you were assigned. This information will be used for the formal written report, which will be developed by staff and sent to the school after the site visit. This written report will also be reviewed by the certification committee to determine the specialty areas qualifying for certification.

VISITING TEAM MEMBER GUIDELINES

Be aware of the "HALO EFFECT" - That is, simply because a program appears to excel in one area (tools and equipment as an example) that does not mean that this carries over to other areas. Another example would be a personable instructor. "Nice guys" do not necessarily mean that the program or area provides high quality training.

Also, be aware of contrast errors (They operate in a different manner than I do, therefore they are wrong), similarity errors (They operate like I do, or their methods are familiar to me so, therefore, the program is good) and first impressions of the program. These types of errors can lead to false conclusions about overall program quality.

Interviewing Instructors and Administrators

- Such sessions are a major part of the evaluation process.
- Do not try to conduct a trial, rather strive for a relaxed, informal atmosphere to clarify issues.
- Avoid thinking, "In my program or school...", you are evaluating another program against standards,not in comparison to your place of employment.
- Remain friendly and retain a positive outlook.
- Don't argue with an instructor, administrator, or staff member about the way something is done.
- Instructors will ask you how your program operates. Answer them, but indicate other approaches may work just as well.

Classroom and Shop Visits

Instructors recognize the need for classroom and shop visits during the site visit, but there are points to remember.

- .Be as unobtrusive as possible.
- .If you have questions or desire more information, spend a few minutes with the instructor when he/she is free.
- .Save your comments for later meetings.
- .Instructors will be asked to carry on as usual during our visit; you should encourage this.

After the Visit

After you leave the school, respect the confidentiality of your findings. Do not divulge your observations or program judgements following the visit.

Determining if the program meets the AMTEP standards for quality automotive specialty service area(s) training is the goal. Overall program improvement is also a primary goal of the site visit. Your observations may agree with the staff and administration's or they may not, but if you sincerely believe that your recommendations, if implemented, will improve the program, you have done your job well.

GLOSSARY OF TERMS

1. CURRICULUM: All the objectives, content, and learning activites arranged in a sequence for a particular instructional area. An orderly arrangement of integrated subjects, activities, and experiences which students pursue for the attainment of a specific education goal.
From - What is Competency Based Vocational Education-CBVE?
Maryland Vocational Curriculum Production Project, 1978.
2. COMPETENCY (Hands on) - Performance of a task to the level or degree specified in the performance standard for the task.
3. CRITERION REFERENCED MEASURE(S) - An exercise based on a performance objective for a task, and designed to measure attainment of that objective. (Also called performance test(s) or criterion referenced test)
4. GOAL - A statement of the intended outcome of participation in the training program.
5. LIVE WORK - The processing, assignment and student performance of the appropriate diagnosis, rebuild or replacement tasks on street legal vehicles.
6. MASTERY - (See Competency - Hands on)
7. OBJECTIVE, PERFORMANCE - A written statement describing an intended outcome (competent task performance) in terms of student performance. (Also called "behavioral" objective or instructional objective) R.F. Mager Associates, 13245 Rhoda Drive, Los Altos Hill, California.
8. PERSONAL CHARACTERISTIC - Attributes which are not readily measurable, and are generally in the affective or cognitive domains.

9. SPECIALTY/SPECIALIST (AREAS) - Relates to one or more of the following eight areas: (1) Front End, (2) Brakes, (3) Heating and Air Conditioning, (4) Engine Tune up (including emission control systems), (5) Automatic Transmission, (6) Electrical Systems, (7) Manual Transmission and Rear Axle, and (8) Engine repair.

10. STANDARD - "...Something established for use as a rule or basis of comparison in measuring quantity, quality, value, etc." Websters New World Dictionary (1973)

11. STANDARD, PERFORMANCE - A written specification of the results of acceptable task performance.

12. STANDARD, PERSONAL - An attribute or characteristic of an individual which facilitates entry into an advancement in an occupation.

13. STANDARD, PROGRAM - A specific quality or desired characteristic of a training program designed to prepare individuals for employment.

14. TASK - A task (statement) describes a unit of work activity which has an identifiable beginning and ending point in its accomplishment, and consists of two or more observable steps.

15. TRAINING STATION - An area with appropriate tools and equipment, large enough to allow safety and competency development in task performance.

****

Must or shall is an imperative need, duty or requirement; an essential indispensable item; mandator.

Should is used to express a recommendation, not mandatory but attainment whould increase program quality.

May or could expresses freedom to follow a suggested alternative.

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(7/1/81)

EVALUATION GUIDE

-AMTEP-

STANDARD 1 - PURPOSE

THE AUTOMOBILE MECHANIC TRAINING PROGRAM MUST HAVE CLEARLY STATED PROGRAM GOALS, RELATED TO THE NEEDS OF THE STUDENTS AND EMPLOYERS SERVED.

1.1 EMPLOYMENT POTENTIAL

A. What percentage of the program completors obtain employment in the automotive service industry within ninety days of program completion? _______%

B. Are employers surveyed on a regular basis (at least annually) to determine training needs of their potential employees?

YES____ NO____ BUT...

1.2 PROGRAM DESCRIPTION/GOALS

Is a document available (brochure or catalog) which includes the following:

A. Admission requirements? YES____ NO____ BUT...

B. Employment potential? YES____ NO____ BUT...

C. Area(s) of specialty training offered? YES____ NO____ BUT...

D. Cost of all Tuition and Fees? YES___ NO____ BUT...

E. Technical qualifications of the instructional staff?

YES____ NO____ BUT...

F. Overall goal(s) of the program? YES____ NO____ BUT...

Is the material given to students prior to enrollment?

YES____ NO____ BUT...

STANDARD 2 - ADMINISTRATION

PROGRAM ADMINISTRATION MUST INSURE THAT INSTRUCTIONAL ACTIVITIES SUPPORT AND PROMOTE THE GOALS OF THE PROGRAM.

2.1 STUDENT COMPETENCY CERTIFICATION

Does the certificate or diploma a student receives upon program completion clearly specify the area(s) of demonstrated competency?

YES____ NO____ BUT...

2.2 CHAIN OF COMMAND

Does the administrative structure outline indicate the responsibilities and authorities of program personnel?

YES____ NO____ BUT...

2.3 ADMINISTRATIVE SUPPORT

A. Are provisions made for instructors to return to industry for planned in-service and beneficial upgrading on a regular basis?

YES___ NO___ BUT...

B. Are training stations available in the type and number required for specialty areas described in the program goals?

YES____ NO____ BUT...

C. Are the tools and equipment needed to provide the training described in the program goals and performance objectives available in the shop area?

D. Do the tools and equipment exist in the quantity needed for efficient and effective instruction?

YES____ NO____ BUT...

E. Do the tools and equipment used in the training program meet industry quality standards?

YES____ NO____ BUT...

F. Are current general and technical automotive magazines and papers available for student and instructor use?

YES____ NO____ BUT...

G. Is the annual budget prepared by the program faculty in conjunction with the institutional administration?

YES___ NO___ BUT...

If a NO answer to any of the above indicates a lack of administrative support, please elaborate.

2.4 WRITTEN POLICIES

A. Have written policies regarding student and institutional responsibilities been approved by the administrative and/or policy board? YES____ NO____ BUT...

B. Are policies regarding safety, liability and shop operation prominently displayed in the shop area?

YES____ NO___ BUT...

C. Are these policies provided to each student and instructor?

YES____ NO____ BUT...

2.5 ADVISORY COMMITTEE

A. How often does the Advisory Committee meet?________________

B. Do the minutes of the meetings indicate meaningful input by committee members? YES___NO____BUT...

C. Is there at least one employed automobile mechanic/technician on the committee? YES____ NO____ BUT...

D. Are local employers adequately represented?

YES____ NO____ BUT...

E. Are consumer interests adequately represented?

YES____ NO____ BUT...

F. Are former students represented? YES____ NO____ BUT...

2.6 PUBLIC/COMMUNITY RELATIONS

Are public relations materials distributed on a regular basis?

YES____ NO____ BUT...

2.7 LIVE WORK ACCOUNTING

A. Is a system used to collect, account for and disburse live work repair receipts? YES____ NO____ BUT...

B. Is support staff (not the instructors) responsible for collecting payment for live work repairs? YES____ NO____ BUT...

STANDARD 3 - LEARNING RESOURCES

SUPPORT MATERIAL CONSISTENT WITH BOTH PROGRAM GOALS AND PERFORMANCE OBJECTIVES MUST BE AVAILABLE TO STAFF AND STUDENTS.

3.1 SERVICE MANUALS

A. Are manuals with the major manufacturers service procedures and specifications for vehicles manufactured within the last ten (10) years available for reference purposes?

YES____ NO____ BUT...

B. Are manufacturers specification manuals located in the shop area?

YES____ NO____ BUT...

3.2 MULTI-MEDIA

A. Are appropriate, up-to-date multi-media materials and hardware such as flip charts, tape-slides, motion and overhead transparency projectors, video equipment and other media used in the training process? YES____ NO____ BUT...

B. Are media soft and hardware decentralized and readily available where appropriate?

YES____ NO____ BUT...

3.3 INSTRUCTIONAL DEVELOPMENT SERVICES

A. Do specialists provide media development services for the instructional staff? YES ___ NO ___ BUT...

B. Are equipment and supplies available for faculty use in duplicating materials and producing overhead transparency materials or other media software?

YES ___ NO ___ BUT...

C. If curriculum or instructional development specialist(s) are employed by the school, do they hold regular in-service and/or training for curriculum and media development and equipment use?

YES ___ NO ___ BUT...

3.4 PERIODICALS

Are current general and technical automotive magazines and newspapers available for student and instructor use?

YES ___ NO ___ BUT...

3.5 STUDENT MATERIALS

A. Are instructional texts or pertinent material available for each student which satisfy the objectives of the mode of instruction used? YES ___ NO ___ BUT...

B. Are the specialty textbooks copyright dates no more than three (3) years old? YES ___ NO ___ BUT...

C. Are the basic textbooks copyright dates no more than six (6) years old?

YES ___ NO ___ BUT...

STANDARD 4 - FINANCES

FUNDING MUST BE PROVIDED TO MEET THE APPROVED PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

4.1 PROGRAM ENROLLMENT

What is the per student training cost? ________________

4.2 BUDGET

A. Is an annual budget developed for program operation?

YES___ NO___ BUT...

B. Are the budgeted funds allocated to and used by the program?

YES___ NO___ BUT...

C. Is the funding adequate for program operation?

YES___ NO___ BUT...

4.3 BUDGET PREPARATION Is the annual budget prepared by the institutional administration in conjunction with the program staff?

YES___ NO___ BUT.. .

4.4 STATUS REPORTS

How often are budget status reports provided to instructional staff?________________________

STANDARD 5 - STUDENT SERVICES

SYSTEMATIC PREADMISSION TESTING, INTERVIEWS, COUNSELING SERVICES, AND PLACEMENT AND FOLLOW-UP PROCEDURES MUST BE USED.

5.1 PRETESTING

A. Are students pretested in the following areas prior to program enrollment?

Reading YES___ NO___

Mathematics YES___ NO___

Manipulative Ability YES___ NO___

C. Are testing procedures stated in the program explanatory material and available to all interested parties?

YES____ NO____ BUT...

D. Is written justification available for all requirements?

YES____ NO____ BUT...

5.2 PREADMISSION INTERVIEWS

Are students interviewed by the counselor and department head and/or instructor(s) prior to program admission?

YES____ NO____ BUT...

5.3 STUDENT RECORDS

Are the permanent records for former students in the program available in one central location? YES____ NO____ BUT...

5.4 PLACEMENT

Is a systematic student placement system used to assist program graduates to obtain employment in the automobile service industry? YES____ NO____ BUT...

5.5 FOLLOW-UP

A. Is a formal follow-up system used to determine students' employment location? YES____ NO____ BUT...

B. Does the follow-up questionnaire ask the students to rate the efficiency and effectiveness of their training?

YES____ NO____ BUT...

C. Does the following procedure assure feedback regarding needed additions or deletions to the training curriculum, training program, and tool and equipment types compared to those the graduates are now using in industry?

YES____ NO____ BUT...

D. Does the follow-up system for program graduates ask for reasons for employment outside of the automotive service industry?

YES____ NO____ BUT..

E. Is this information used to modify the training program? (if applicable) YES____ NO____ BUT...

5.6 LEGAL REQUIREMENTS

Is the training program in compliance with applicable local, state, and federal education requirements?

YES____ NO____ BUT...

STANDARD 6 - INSTRUCTION

INSTRUCTION MUST BE SYSTEMATIC AND REFLECT PROGRAM GOALS. A TASK LIST AND SPECIFIC PERFORMANCE OBJECTIVES WITH CRITERION REFERENCED MEASURES MUST BE USED.

6.1 PROGRAM PLAN

A. Is the training program logically sequenced?

YES____ NO____ BUT...

B. Are alternate but equivalent paths available?

YES____ NO____ BUT...

6.2 STUDENT TRAINING PLAN

A. Is a specific training plan which indicates the student goals and the steps needed to meet that goal used for each student?

YES____ NO____ BUT...

B. Is each student given a copy of his/her training plan?

YES____ NO____ BUT...

6.3 PREPARATION TIME

Does the instructor's daily schedule provide adequate time for planning? YES____ NO____ BUT...

6.4 TEACHING LOAD

What is the current instructor/student ratio?______:________

What is the average instructor/student ratio for the past year?

_____________:____________

What are the average student contact hours per week? ____________

6.5 CURRICULUM

A. Which one or all of the following areas provides theory and "hands on" training in the area for all of the tasks designated "high priority" (H.P.) in the AMTEP task list (1981). Are the necessary tools and equipment available? (Place a YES or NO in the appropriate space.)

SPECIALTY AREA(S)	TASKS	TOOLS & EQUIPMENT
1. Front End	_____	_____
2. Brakes	_____	_____
3. Heating & Air Conditioning	_____	_____
4. Engine Tune-up (Including emission control systems)	_____	_____
5. Automatic Transmission	_____	_____
6. Electrical System	_____	_____
7. Manual Transmission and Rear Axle	_____	_____
8. Engine Repair	_____	_____

B. Have additional tasks been reviewed and approved by the program advisory committee? YES____ NO____ BUT...

C. Does the curriculum include instruction on:

1. OSHA regulations the student may encounter upon employment?

YES___ NO___ BUT...

2. Legal responsibilities of the mechanic regarding Environmental Protection Agency regulations? YES___ NO___ BUT...

3. Other appropriate requirements which may affect their on-the-job activities? YES___ NO___ BUT...

D. Are tasks requiring competency in fillng out work order forms, ordering parts, and recording the time spent on a task included in the curriculum? YES___ NO___ BUT...

6.6 STUDENT PROGRESS

Is a progress chart or other record keeping tool (with specific tasks) used to indicate students' progress? YES___ NO___ BUT...

6.7 PERFORMANCE STANDARDS

A. Is an acceptable level of performance stated for each task?

YES___ NO___ BUT...

B. Are the standards given to students and potential employers?

YES___ NO___ BUT...

C. Are students required to demonstrate "hands-on competency" or "mastery" of a task before the instructor verifies a student's performance? YES___ NO___ BUT...

6.8 SAFETY STANDARDS

A. Is safety instruction given prior to shop work?

YES___ NO___ BUT...

B. Is safety instruction an integral part of the training program?

YES____ NO____ BUT...

C. Are regular safety tests included in the training program?

YES____ NO____ BUT...

D. Is eye protection worn in the shop area?

YES____ NO____ BUT...

6.9 PERSONAL STANDARDS

A. Does all training activity and instructional material emphasize the following?

1. The importance of maintaining good relationships with fellow employees? YES____ NO____ BUT...
2. Respect for fellow students' tools and other property? YES____ NO____ BUT...
3. The development of good customer relations? YES____ NO____ BUT...
4. Appropriate clothes, similar to that found in local shops? YES____ NO____ BUT...
5. Student cleanliness so seats, steering wheels, etc., are not greasy after the job is complete? YES____ NO____ BUT...
6. The use of fender covers? YES____ NO____ BUT...
7. Other personal characteristics identified in the AMTEP personal standards. YES____ NO____ BUT...

6.10 WORK HABITS/ETHICS

A. Is the training program organized in such a manner that work habits developed in the training program are similar to work habits required on the job? YES____ NO____ BUT...

B. Is instruction in ethical practices an integral part of the program? YES____ NO____ BUT...

6.11 PROVISIONS FOR INDIVIDUAL DIFFERENCE

Is the training program structured to accomodate students with different levels of cognitive and psychomotor ability?

YES____ NO____ BUT...

6.12 RELATED INSTRUCTION

A. Is related mathematics, communications,and interpersonal relations instruction coordinated with ongoing instruction in the training program? YES____ NO____ BUT...

B. Is this instruction provided by a qualified instructor who is a specialist in the area? YES____ NO____ BUT...

6.13 TESTING

A. Are written tests used to evaluate task performance?

YES____ NO____ BUT...

B. Are performance tests used to evaluate task performance?

YES____ NO____ BUT...

C. Do the performance tests have a stated go-no-go level of performance? YES____ NO____ BUT...

If NO, how is competency determined?

D. Are students encouraged to take certification tests that are publicly recognized indicators of capabilities?

YES____ NO____ BUT...

6.14 EVALUATION OF INSTRUCTION

A. Is a systematic program evaluation system used to make decisions about program efficiency, effectiveness and content?

YES____ NO____ BUT...

B. Is student input used in the evaluation system?

YES____ NO____ BUT...

C. Are instructor(s) evaluations used in the evaluation system?

YES____ NO____ BUT...

D. Is self evaluation of instruction utilized on a regular basis?

YES____ NO____ BUT...

E. Is student follow-up data reviewed and systematically used in the evaluation process? YES____ NO____ BUT...

F. Does the advisory committee review the task list for additions or deletions? YES____ NO____ BUT...

6.15 LIVE WORK

A. Does evidence exist that all live work benefits the student and supplements ongoing instruction? YES____ NO____ BUT...

B. Has a student had instruction and practice on a specific repair task before a live work job requiring this task is assigned?

YES____ NO____ BUT...

C. Do the program policies EXCLUDE the following vehicles as the PRIMARY source of live work projects?

1. Vehicles owned by students in the automobile mechanic/technician training program? YES____ NO____ BUT...
2. School buses or other vehicles owned and operated by the governing body or administrative personnel?

YES____ NO____ BUT...

D. Do all vehicles in the shop have an industry type work order written up and then attached to or placed inside the vehicle?

YES____ NO____ BUT...

6.16 ARTICULATION

Are agreements used between programs with equivalent competencies to eliminate unnecessary duplication of instruction?

YES____ NO____ BUT...

STANDARD 7 - EQUIPMENT

EQUIPMENT AND TOOLS USED IN THE AUTOMOBILE MECHANIC/TECHNICIAN TRAINING PROGRAM MUST BE OF THE TYPE AND QUALITY FOUND IN THE REPAIR INDUSTRY AND MUST ALSO BE THE TYPE NEEDED TO PROVIDE TRAINING TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

7.1 SAFETY

Are all shields, guards, and other safety devices in place, operable and used? YES____ NO____ BUT...

7.2 TYPE AND QUANTITY

A. Are the tools and equipment needed to provide training in each area to be certified available in the shop area?

YES____ NO____ BUT...

B. Do the tools and equipment exist in the quantity needed for efficient and effective instruction? YES____ NO____ BUT...

C. Do the tools and equipment used in the training program meet industry quality standards? YES____ NO____ BUT...

7.3 CONSUMABLE SUPPLIES

Are sufficient consumable supplies readily available to assure continuous instruction? YES____ NO____ BUT...

7.4 MAINTENANCE

Is a preventative maintenance program used to minimize equipment down-time? YES____ NO____ BUT...

7.5 REPLACEMENT

A. Is a systematic replacement schedule used to maintain up-to-date tools and equipment at industry and safety standards?

YES____ NO____ BUT...

B. Is student follow-up and local Advisory Committee input used in the replacement system? YES____ NO____ BUT...

7.6 INVENTORY

Is an inventory system used to account for tools, equipment, parts and supplies? YES____ NO____ BUT...

7.7 PARTS PURCHASING

A. Is a systematic parts purchasing system used—from work order to parts man to jobber? YES____ NO____ BUT...

B. Does the lack of parts delay task performance?

YES____ NO____ BUT...

7.8 HAND TOOLS

A. Does each student have a basic hand tool set comparable to the tools that will be required for employment?

YES____ NO____ BUT...

B. Is each student encouraged to purchase a hand tool set (during the period of instruction) which is appropriate to the automotive specialty area(s) in which he/she is being trained?

YES____ NO____ BUT...

STANDARD 8 - FACILITIES

THE PHYSICAL FACILITIES MUST BE ADEQUATE TO PERMIT ACHIEVEMENT OF THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

8.1 TRAINING STATIONS

Are training stations available in the type and number required for task performance as outlined in the program goals and performance objectives?

Adequate bench space? YES____ NO____ BUT...

Adequate shop space? YES____ NO____ BUT...

8.2 SAFETY

A. Are hazardous areas (brake shoe grinding, welding, etc.) identified with signs? YES____ NO____ BUT...

B. Do fire extinguishers have regular, current inspection tags attached and meet fire codes for different types of fires?
YES____ NO____ BUT...

C. Is an electrical disconnect system available to shut down all outlets in case of emergency? YES____ NO____ BUT...

D. Is lighting adequate for task performance and safety?
YES____ NO____ BUT...

E. Are regular safety inspections held? YES____ NO____ BUT...

F. Are all other applicable safety standards met?
YES____ NO____ BUT...

G. Are vehicle traffic areas identified?
YES____ NO____ BUT...

8.3 MAINTENANCE

Is a regular facilities maintenance program used to insure facilities are suitable for instruction?
YES____ NO____ BUT...

8.4 HOUSEKEEPING

Is the classroom and shop area clean and orderly?
YES____ NO____ BUT...

Are the parking and storage areas clean and orderly?
YES____ NO____ BUT...

8.5 OFFICE SPACE

Is an area separate from the shop available and convenient for the instructor(s) use as an office? YES____ NO____ BUT...

8.6 INSTRUCTIONAL AREA

Is an area convenient to but separate from the shop provided for theory instruction and other non-shop activities?

YES____ NO____ BUT...

8.7 STORAGE

A. Is the storage area for specialized tools adequate to support the activities outlined in the program goals and performance objectives? YES____ NO____ BUT...

B. Is the storage area for parts and supplies adequate to support the activities outlined in the program goals and performance objectives? YES____ NO____ BUT...

C. Is the storage area for automobiles adequate to support the activities outlined in the program goals and performance objectives? YES____ NO____ BUT...

D. Is a storage area provided for student tool boxes?

YES____ NO____ BUT...

E. Are the storage areas secure from pilferage and vandalism?

YES____ NO____ BUT...

8.8 SUPPORT FACILITIES

A. Is an area convenient to the training area provided for students to clean up after shop activities? YES____ NO____ BUT...

B. Are lockers conveniently located? YES____ NO____ BUT...

C. Are restrooms conveniently located? YES____ NO____ BUT...

8.9 VENTILATION

A. Is an exhaust fume removal system in place and operable?

YES____ NO____ BUT...

B. Do heating and cooling systems provide sufficient comfort for learning? YES____ NO____ BUT...

8.10 FIRST AID

A. Is a first aid station available? YES____ NO____ BUT...

B. Is it well marked? YES____ NO____ BUT...

C. Is it equipped with basic, up-to-date first aid supplies?

YES____ NO____ BUT...

8.11 FACILITY EVALUATION

Does the Advisory Committee conduct an annual evaluation of the facilities to assure adequacy to meet program needs?

YES____ NO____ BUT...

STANDARD 9 - INSTRUCTIONAL STAFF

THE INSTRUCTIONAL STAFF MUST HAVE TECHNICAL COMPETENCY AND MEET ALL STATE AND LOCAL REQUIREMENTS FOR CERTIFICATION/CREDENTIALING.

9.1 TECHNICAL COMPETENCY

A. Do all faculty members involved with student skill training have experience as an automobile mechanic? YES____ NO____ BUT...

B. How long ago was this experience?______________________________

C. Do instructors hold current nationally recognized certification in specialty area(s) they instruct? YES___ NO___ BUT...

9.2 INSTRUCTIONAL COMPETENCY/CERTIFICATION

Do the instructors meet all state certifying requirements?

YES____ NO____ BUT...

9.3 TECHNICAL UPDATING

A. Are automotive trade publications, service bulletins, and other materials needed to maintain technical competency provided to the instructional staff? YES____ NO____ BUT...

B. Are opportunities provided for instructors to return to industry for planned in-service and beneficial skill upgrading on a regular basis? YES____ NO____ BUT...

9.4 FIRST AID

Do all automotive instructors hold a current American National Red Cross Standard First Aid Certificate? YES____ NO____ BUT...

9.5 SUBSTITUTE

A. Is a systematic method used to obtain "substitute" or "supply" instructors? YES____ NO____ BUT...

B. Is an orientation session for substitutes held on a regular basis? YES____ NO____ BUT...

C. Are the substitutes competent in automotive instruction? YES____ NO____ BUT...

STANDARD 10 - COOPERATIVE AGREEMENTS

WRITTEN POLICIES AND PROCEDURES MUST BE USED FOR COOPERATIVE AND APPRENTICESHIP TRAINING PROGRAMS.

10.1 STANDARDS

Are the performance standards a student will be expected to meet developed and coordinated by the supervising instructor? YES____ NO____ BUT...

10.2 AGREEMENTS

Are all agreements between the institution and the work location written and legally binding? YES____ NO____ BUT...

10.3 SUPERVISION

Is a supervising automotive instructor assigned the responsibility, authority, and time to coordinate and monitor cooperative automotive programs? YES____ NO____ BUT...

APPENDIX C

SELF-STUDY INTRODUCTION

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- AMTEP -

AUTOMOBILE MECHANIC/TECHNICIAN TRAINING PROGRAM

SELF-STUDY MANUAL

JULY

Copyright, MVMA, 1981

AUTOMOBILE MECHANIC/TECHNICIAN TRAINING PROGRAM

SELF-STUDY

INTRODUCTION

This "self-study" for an automobile mechanic/technician training program contains the same items as the evaluation guide the visiting team members will use during your program review. This means that the items you review prior to the team visit are exactly the same as those the visiting team will review.

The first step in your self-study is to compare the items in this document with the Program Standards found in the Automobile Mechanic/Technician Training Program Standards Manual, July 1981. The items in this "self-study" were developed to determine the degree to which the standards are met.

The visiting team will review your program in respect to four things; your stated program goals, the overall program operation, specialty area tasks included in your curriculum, and the Program Standards. The team will be looking for discrepencies or mismatches between these items. The following example is taken from the evaluation guide used by the visiting team members. The visiting team will use the following procedure on each standard to obtain a composite of the program.

> "As an example, one area in which the program may be seeking certification could be Automatic Transmission Specialist. Item (7.2-A) states the question, 'Are the tools and equipment needed to provide training in each area to be certified available in the shop area?' To answer questions such as this, you must look for evidence (the tools and equipment) and if you can't see it, ask the faculty to show you the appropriate material to verify your response. If the appropriate materials are not available, you must answer NO to that item on your interview guide. In your oral and written report the seriousness of the discrepancy (NO or NO, but...) can be stated. This may or may not be the only negative response relative to areas in which the program is seeking certification. You must determine this by comparing the program goals and self-study response with the available evidence and make a decision."

As you review the self-study items you will notice that two different types of responses are required. One type is to fill in the blank, the other type requires a little explanation. After most of the items you will find a YES ____, NO____, or But... . We recognize that many methods may be used to train an automobile mechanic/technician or specialist. Everything does not fit into little yes-no boxes.

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Therefore, the BUT... . This allows program personnel and the visiting team members to explain how your program fits the standards. This means you can answer an item several ways, (A) Yes, (we do this or we have this), or (B) Yes (we do this or have this) BUT..., or (C) NO (we don't do this or don't have this) or, (D) No (we don't do this or don't have this) BUT... .

INSTRUCTIONS

Please go through the self-study, responding to each item. If the response is YES, or YES, but..., you must provide material which the team member can review to verify the statement. Please have this material available in one area (where appropriate) for team member review. As an example, if a safety test is routinely given to students, display a copy. Another example deals with employment (Standard 1.1). Please have statistics available which give the percentage employed. A list of tasks covered with records of task performance must be available for the High Priority (H.P.) task in each specialty area being certified. This is critical in the certification decision. (See Standard 6.5)

A NO, or NO, but..., answer to a standard does not necessarily mean the program is deficient. The standards consist of elements which make up an ideal program. All programs will not have all elements.

A tentative schedule of daily activities is found on the next page.

For further information, contact:______________________.

GLOSSARY OF TERMS

1. CURRICULUM: All the objectives, content, and learning activites arranged in a sequence for a particular instructional area. An orderly arrangement of integrated subjects, activities, and experiences which students pursue for the attainment of a specific education goal.
   From - What is Competency Based Vocational Education-CBVE?
   Maryland Vocational Curriculum Production Project, 1978.
2. COMPETENCY (Hands on) - Performance of a task to the level or degree specified in the performance standard for the task.
3. CRITERION REFERENCED MEASURE(S) - An exercise based on a performance objective for a task, and designed to measure attainment of that objective. (Also called performance test(s) or criterion referenced test)
4. GOAL - A statement of the intended outcome of participation in the training program.
5. LIVE WORK - The processing, assignment and student performance of the appropriate diagnosis, rebuild or replacement tasks on street legal vehicles.
6. MASTERY - (See Competency - Hands on)
7. OBJECTIVE, PERFORMANCE - A written statement describing an intended outcome (competent task performance) in terms of student performance. (Also called "behavioral" objective or instructional objective) R.F. Mager Associates, 13245 Rhoda Drive, Los Altos Hill, California.
8. PERSONAL CHARACTERISTIC - Attributes which are not readily measurable, and are generally in the affective or cognitive domains.

9. SPECIALTY/SPECIALIST AREA(S) - Relates to one or more of the following eight areas: (1) Front End, (2) Brakes, (3) Heating and Air Conditioning, (4) Engine Tune-up (including emission control systems), (5) Automatic Transmission, (6) Electrical Systems, (8) Manual Transmission and Rear Axle, and (8) Engine Repair.
10. STANDARD - "...Something established for use as a rule or basis of comparison in measuring quantity, quality, value, etc..." Websters New World Dictionary (1973)
11. STANDARD PERFORMANCE - A written specification of the results of acceptable task performance.
12. STANDARD, PERSONAL - An attribute or characteristic of an individual which facilitates entry into and advancement in an occupation.
13. STANDARD, PROGRAM - A specific quality or desired characteristic of a training program designed to prepare individuals for employment.
14. TASK - A task (statement) describes a unit of work activity which has an identifiable beginning and ending point in its accomplishment, and consists of two or more observable steps.
15. TRAINING STATION - An area with appropriate tools and equipment, large enough to allow safety and competency development in task performance.

****

Must or shall is an imperative need, duty or requirement; an essential or indispensable item; mandatory.

Should is used to express a recommendation, not mandatory but attainment would increase program quality.

May or could expresses freedom to follow a suggested alternative.

TENTATIVE AGENDA

CERTIFICATION TEAM SITE VISIT

(ALL TIMES APPROXIMATE)

Evening prior to visit or first morning visit:

Meal with program faculty and administrator(s)

FIRST DAY

8:30 A.M.	Arrival at school; tour facilities
9:00 A.M.	Review self-study materials with Department Chairman and/or instructor(s)
12:00 NOON	LUNCH
1:00 P.M.	Visit automobile mechanic/technician training area, confer with former students, advisory committee members, local employers, etc.
4:30 P.M.	Adjourn for the day

SECOND DAY

8:30 A.M.	Arrive at school Continue program review and conferences
12:00 NOON	LUNCH
1:30 P.M.	Report to automobile mechanic/technician training program faculty and administrator(s) Conclude site visit

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APPENDIX D

PROGRAM STANDARDS COMMITTEE MEMBERS

AGENDA, MINUTES, AND COMMUNICATION

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AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT

PROGRAM STANDARDS COMMITTEE

PROJECT COORDINATOR

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795 Peachtree Steet N. E.
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INDUSTRY PLANNING COUNCIL REPRESENTATIVE

Dr. Jack Sampson
Educational Co-Chairman
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PROGRAM STANDARDS COMMITTEE MEMBERS

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AGENDA

PROGRAM STANDARDS COMMITTEE
COEI/AMTEP
AUGUST 23-24, 1979

Thursday, August 23

9:00 A.M.	Introductions	B. E. Childers
9:15 A.M.	Accreditation & Project History	B. E. Childers
9:45 A.M.	Project Plan Overview	Charles Losh
10:15 A.M.	Break	
10:30 A.M.	Committee's Goals & Activities	B. E. Childers
11:00 A.M.	Review of Materials Received	Chairman
12:00 NOON	Lunch	
1:00 P.M.	Continue Material Review	
2:30 P.M.	Break	
2:45 P.M.	Initial Standard Development	
4:00 P.M.	Adjourn	

Friday, August 24

9:00 A.M.	Continue Standard Development
10:15 A.M.	Break
10:30 A.M.	Establish Self-Study Activities and Materials
12:00 NOON	Lunch
1:00 P.M.	Establish Team Visit Procedures
2:30 P.M.	Break
2:45 P.M.	Wrap Up
4:00 P.M.	Adjourn

MINUTES

PROGRAM STANDARDS COMMITTEE

MEETING

AUGUST 23 - 24, 1979

ATLANTA, GEORGIA

The meeting was called to order at 9:10 a.m. by Dr. B. E. Childers. Members present were: Dr. Phares S. Nye, Mr. Eugene White, Dr. Bill Montrois, Mr. Wayne Miller, Mr. John Reistrup, and Mr. Jim Wolleat. Also present were: Dr. B. E. Childers, Project Coordinator, Mr. Charles Losh, Project Director and Mrs. Pat Williams, Recording Secretary.

Dr. Childers welcomed the committee and provided them with a brief summary of the purpose of the project along with information relating to the background and history of occupational accreditation. He commented on the standards of the Occupational Commission and their relation toward the evaluation and accreditation of an institution. Dr. Childers also familiarized the committee with the performance objectives of V-TECS.

Approximately 3 years ago a representative of the Industry Planning Council expressed a desire to create performance and program standards for automobile mechanics and approached the Occupational Commission about conducting such a project. A proposal was written and agreed upon by the Occupational Commission and MVMA. This project started in January, 1979, and consist of three phases. Phase I - state-of-the-art research, Phase II - Development of Standards, and Phase III - Field testing of the standards. Upon completion of the project there will be three options to consider, 1) independent accrediting body, 2) become part of AVA's education program, 3) make data available to all accrediting bodies for their use in evaluating such programs or a combination of these three activities.

Dr. Childers requested that each member of the committee introduce themselves and provide the other members with a brief summary of personal data.

Mr. Losh provided the committee with a general outline of the project which consists of three committees; Performance Standards Committtee, Program Standards Committee and Personal Standards Committee. Mr. Losh explained the function and proposed outcome of each of these committees as well as the composition of each committee. The plans of the project is for on site field tests of the various standards developed by the three committees. The first set of evaluation visits will consist of 6 programs, the second will consist of 20 programs and the final field test evaluation visits will consist of visits to 50 programs throughout the United States. Only postsecondary schools will be involved in the initial field test; however, secondary schools may be included in the second and third period of field testing.

The goals and activities of this initial meeting of the Program Standards Committee were explained by Dr. Childers. This committee will be assigned three basic tasks; 1) develop a set of standards relating to automobile mechanics training programs, 2) develop application and self-study procedures for use by individual programs, 3) develop a team visiting manual in order to determine the procedures for evaluation by a team.

Dr. Phares Nye, committee chairman, reviewed the agenda item list and committee members were assigned, on a voluntary basis, to review background and research data and to report their findings, recommendations, and suggestions to the committee.

The committee prepared a tentative list of program standards which were throughly discussed by the committee. The committee agreed that the staff would be provided with editorial privileges relating to this tentative list of standards. Additions, deletions, or changes of the program standards will be made by the committee at the next official meeting.

Dr. Nye addressed the committee regarding the necessity or advantage of providing a set of instructions to an institutuion regarding the proper procedure for conducting a self-study. He indicated that a school needs to be provided background, procedures, and preparation guides.

It was the consensus of the committee that each institution should conduct a self-study. There was discussion as to the type of self-study to be conducted, i.e., narrative, check sheet, etc. Dr. Nye suggested a status study in lieu of a complete self-study. There was concern expressed relating to the number of evaluation visits an institution may be faced with, i.e., stat evaluation, accreditation, and automobile mechanic program evaluation. Dr. Childers said that he anticipated that at the time of a SACS-COEI team visit the AMTEP evaluation could occur in cooperation with such a team visit.

There was considerable discussion on the subject of how the tentative program standards for the project could be applied to other vocational programs. It was the consensus of the group that a manual should assure self assessment, improvement, and upgrading. The format of this manual should combine the positive aspects of this manual and consider interweaving of the format of agenda item 9 (Industrial Mechanics Assessment and Planning Manual - Oregon) indicating where a program was and how it got to where it is because of being assessed by an evalation team. It was decided that agenda item 9 (Industrial Mechanics Assessment and Planning Manual - Oregon) would be used as a guide in establishing self-study activities. The self-study manual should be as comprehensive a document as possible and should familiarize the recipient with the process as much as possible. After further discussion, it was determined that little work could be done toward creating a self-study manual until the program standards were in a more final form. Jim Wolleat stated that he felt that there should be allowance for correctional effort and a target date for completion.

Dr. Nye suggested the following accreditation procedure:

1) Applicaiton to accrediting body

2) Orientation and guidance manual be provided the institution

3) Staff of accrediting body identify competent evaluators based on the program to be evaluated

4) Evaluators, once selected, be provided with necessary evaluative materials

5) Conduct an on site visit with written report on findings to be submitted to accrediting body

6) Copy of written report be submitted to institution

7) Written institutional response report

8) Committee be formed to determine whether or not the program is accreditable and determine acceptance or rejection

9) Evaluation rating to be determined on a 5 or 7 point scale

It was agreed by the committee that an on site visit should be a part of the program accreditation procedure, and that the visiting team would consist of two members and one staff representative. The length of an evaluation visit would be two days.

The team report should consist of statements on findings, recommendations, and possible suggestions which would be optional.

It was the consensus of the committee that the approving committee would be chosen from the three major committees involved in the project.

The next meeting of the Program Standards Committee was tentatively set for January 28 - 29, 1980 in Denver, Colorado.

AGENDA

PROGRAM STANDARDS COMMITTEE

DENVER COLORADO

JANUARY 28-29, 1980

MONDAY, JANUARY 28, 1980

9:00 A.M.	Convene - Introductions
9:30 A.M.	Review project activities to date
10:00 A.M.	Review materials developed to date
10:30 A.M.	BREAK
10:45 A.M.	Review Standards - Evaluative Criteria
12:00 Noon	LUNCH
1:15 P.M.	Continue material review
2:45 P.M.	BREAK
4:30 P.M.	Adjourn

TUESDAY, JANUARY 29, 1980

8:30 A.M.	Convene
	Revise peripheral materials as required
10:00 A.M.	BREAK
10:15 A.M.	Revise Standards - Evaluative Criteria as required
12:00 Noon	LUNCH
1:15 P.M.	Continue Standards work
2:45 P.M.	BREAK
3:00 P.M.	Wrap up
4:00 P.M.	Adjourn

MINUTES

PROGRAM STANDARDS COMMITTEE

JANUARY 28-29, 1980

DENVER, COLORADO

The meeting was called to order at 9:05 A.M. by Dr. Phares S. Nye, Chairman. Members present were: Dr. Phares S. Nye, Mr. Eugene White, Dr. Bill Montrois, Mr. Wayne Miller, Mr. Jim Wollcat, Mr. Nick Bello and Ms. Gail Boyle. Also present were: Dr. B. E. Childers, Project Coordinator, Mr. Charles Losh, Project Director, and Mrs. Patti Williams, Project Secretary.

Introductions were made with each person giving a brief statement on their background and why they were selected for this committee. This was for the benefit of two persons who did not attend the first meeting of the committee; Mr. Nick Bello, and Ms. Gail Boyle who is replacing Mr. John Reistrup as representative of the U.S. Department of Transportation, Division of Consumer Affairs.

Project activities to date were reviewed by Dr. Childers. The purpose of the project is development of a procedure to evaluate automobile mechanic training programs for improvement and accreditation. There are three phases in the process: Development, validation, and implementation. There are three types of standards to be used in evaluating automobile mechanic training programs; Performance Standards, Program Standards, and Personal Standards. There are special committees assigned to develop each set of standards. The project is presently in the validation phase.

During the development phase, there were six on site evaluation visits conducted in New Hampshire, Texas, Washington, Pennsylvania, California, and Alabama. Feedback resulting from these visits were included in the updated Draft II of the Program Standards and Evaluative Criteria. Draft II will be used in the next eight on site evaluation visits. In February and March 1980, visits will be to programs in Florida, Georgia, Missouri, Oklahoma, Ohio, Illinois, Arizona, and Utah. Mr. Losh outlined the procedures of the on site visits to the committee.

Mr. Losh informed the committee that the task list developed by the Performance Standards Committee will be validated by a sampling of persons who have passed the NIASE tests The Performance Standards Committee met two weeks earlier and developed initial performance standards for each of the tasks reflected on the task list.

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Materials developed by the Program Standards Committee to this date was discussed by Mr. Charles Losh. The present documents relating to Program Standards and Evaluative Criteria, including materials prepared by Dr. Homer Jones of the I.P.C., were reviewed by the committee. There were a number of changes and revisions made in the documents. These changes are reflected in Draft III of the Program Standards and Evaluative Criteria.

The meeting adjourned on January 29, 1980 at 1:00 P.M.

September 14, 1979

Dear :

Thank you for your help at the committee meeting in August. I think we were quite productive and now have a solid base for our evaluative criteria and standards development process.

Using the headings developed at the meeting, I have worked up a paragraph or more in each area, providing specifics for the area. Please review this material and send me your additions, deletions, modifications, etc., and I will try to incorporate them in future drafts of the standards.

The first field test sites are in Alabama and Texas the last week of this month, with four more site visits in October. I plan to review the standards and other materials after each set of site visits, and will share meaningful changes with you.

I have enclosed several items for your review; please call or write with your input. I'm looking forward to seeing all of you in January.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
Evalutation Project

CL/pdw

Enclosures

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 875-8011 Area Code 404

MEMORANDUM

DATE: September 25, 1979

TO: Program Standards Committee

FROM: Charles Losh, Director - AMTEP

SUBJECT: Program Standards Material

Please find enclosed copies of various materials we took to the first field test sites in Alabama and Texas. Please review this material and drop me a line with your comments.

Enclosures: Guidlines
Pilot Test Site Feedback Form
Team Member Feedback Form
Team Member/Instructor Questionnaire

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

THIS LETTER SENT TO ALL PROGRAM STANDARDS COMMITTEE MEMBERS

DATE: October 10, 1979

TO: Program Standards Committee

FROM: Charles Losh, Director - AMTEP

SUBJECT: First Annual Report and AMTEP Brochure

I have enclosed a copy of the First Annual Report and ten copies of our new brochure. Please distribute the brochures to those you feel would have an interest in the project. If you can use more brochures, let me know.

Hope all of your work is going well. I am looking forward to seeing you in January.

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
Phone 897-6156 Area Code 404

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

DATE: March 28, 1980

TO: Program Standards Committee Members

FROM: Charles Losh, Director - AMTEP

SUBJECT: Revision of Program Standards, Evaluation Guide, and Self-Study.

Enclosed for your information and review are copies of the latest revisions of the AMTEP Program Standards, Evaluation Guide and Self-Study. These documents have been revised according to changes recommended by the committee during the January meeting held in Denver.

Also enclosed is a copy of the minutes of the above mentioned meeting.

If you have any comments or suggestions for further change please feel free to contact me.

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
Phone 897-6156 Area Code 404

July 24, 1980

Dear

As you know, the automobile industry is experiencing a downturn, which is now effecting the project. We have not received our Phase III contract yet, but are expecting to be refunded. The funding level will be lower than originally anticipated however, so we will have to see the final dollar figure to do future planning. Therefore we are not scheduling a committee meeting until we receive further information from Detroit. I will contact you later with further information.

Would you please review the standards and related materials and write me with recommended changes you feel are needed. It would appear that we will be using the Draft III materials for Phase III field tests, with only minor changes. Therefore, your observations on the materials will be appreciated.

Hope your summer is going well!!

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
 Evaluation Project (AMTEP)

CL/pdw

APPENDIX E

TASK LIST

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TASK LIST

SEE APPENDIX V

Page 367-396

APPENDIX F

PERFORMANCE STANDARDS

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PERFORMANCE STANDARDS

SEE APPENDIX V

Page 415 - 469

APPENDIX G

PERFORMANCE STANDARDS COMMITTEE MEMBERS
AGENDA, MINUTES AND COMMUNICATION
and
MECHANIC/TECHNICIAN SURVEY

AUTOMOBILE MECHANICS TRAINING EVALUATION PROJECT

PERFORMANCE STANDARDS COMMITTEE

PROJECT COORDINATOR

Dr. B. E. Childers, Executive Director
Commission on Occupational Education Institutions
Southern Association of Colleges and Schools
795 Peachtree Street N. E.
Atlanta, Georgia 30308

PROJECT DIRECTOR

Mr. Charles Losh, MVMA Project Director
Automobile Mechanic Training Evaluation Project (AMTEP)
Commission on Occupational Education Institutions
Southern Association of Colleges and Schools
795 Peachtree Street N. E.
Atlanta, Georgia 30308

INDUSTRY PLANNING COUNCIL REPRESENTATIVE

Dr. Homer Jones, Administrator
Proficiency and Testing
General Motors Corporation - Top of Troy
755 West Big Beaver Road - Suite 300
Troy, Michigan 48084

PERFORMANCE STANDARDS COMMITTEE MEMBERS

Mr. Hugh Dawkins, Automobile Mechanic Instructor
Atlanta Area Technical School
1560 Stewart Avenue S.W.
Atlanta, Georgia 30310

Mr. Jerry Kohl, Automobile Mechanic Instructor
Lincoln East High School
1000 S. 70th
Lincoln, Nebraska 68510

Mr. Jerry Solberg, Automobile Mechanic
Jerry's Garage
Bailey, Colorado 80421

Dr. Bill Lundell, Assistant Director
Vocational-Technical and Industrial Education
Minneapolis Public Schools
807 N.E. Broadway
Minneapolis, Minnesota 554123

Mr. Tom Hinds, Director
Instructional Material Lab
Ohio State University
Columbus, Ohio 43210

Mr. M. H. Hunerwadel
Automotive Service Manager
2186 Collins Drive N. W.
Atlanta, Georgia 30318

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 875-8011 Area Code 404

AGENDA

INSTRUCTIONAL ASSESSMENT COMMITTEE

COEI/MVMA

MAY 21 - 22, 1979

MONDAY, MAY 21

9:00 A.M.	Accreditation and Project History.........	B. E. Childers
9:30 A.M.	Project Plan Review......................	Charles Losh
10:30 A.M.	Break	
11:00 A.M.	Identifying Tasks and Establishing a Task List............................	Bill Koscheski
12:00 Noon	Lunch	
1:00 P.M.	Review Materials from State Departments of Education and Other Sources	
4:00 P.M.	Adjourn	

TUESDAY, MAY 22

9:00 A.M.	Small Group Work for Task List Development in Seven Major Areas:
	Engine Repair
	Automatic Transmission
	Manual Transmission and Rear Axle
	Front End
	Brakes
	Electrical Systems
	Heating and Air Conditioning
	Engine Tune-up
12:00 Noon	Adjourn

MINUTES

MAY 21 - 22, 1979

MVMA PERFORMANCE STANDARDS COMMITTEE

At 9:10 a.m. the meeting was called to order by Dr. B. E. Childers. Members present were: Jerry Kohl, Bill Lundell, Tom Hinds, M. H. Hunerwadel and Hugh Dawkins. Also present were: B. E. Childers, Project Coordinator and Charles Losh, Project Director.

Dr. Childers welcomed the committee members and gave them a brief background summary of the purpose of this project as well as the history and objective of the Commission on Occupational Education Institutions. He explained the duties and objectives of the committee in relation to auto mechanics training program evaluation to meet the needs of industry. Dr. Childers informed the committee that the Motor Vehicle Manufacturers Association represents the major agencies manufacturing motor vehicles in the United States. One of the problems facing this association is the adequate training of mechanics to service these vehicles. The Industry Planning Council (IPC) will review the project as it progresses.

The Motor Vehicle Manufacturers Association is sponsoring the Evaluation Project for Motor Vehicle Mechanics over a three year period to develop sets of standards for evaluating auto mechanics training programs. The Performance Standards Committee will be responsible for the initial development of performance standards and identify those standards needed for an adequate training program in this field. IPC will provide a representative to serve on this committee to act as a liaison between the IPC and the Performance Standards Committee.

The Commission on Occupational Education Institutions was selected to conduct this project because it is the largest accrediting body of vocational-technical schools. Hopefully the standards developed will be recognized by all accrediting bodies.

Dr. Childers asked that each individual member of the committee introduce themselves and provide the other members with a brief summary of their background in relation to the field of auto mechanics and/or vocational education.

Charles Losh reviewed the agenda items and PERT Chart Plan of the project. He also discussed the national accreditation sites and the purpose of these site visits, which will be to validate the set of standards developed by this committee. Upon completion of each set of site visits the evaluation material will be reviewed and revised as required. Mr. Losh also reviewed the process of identifying the performance standards and provided them with an example of same.

Upon completion of the meeting on May 22, 1979, the committee submitted a tentative automobile mechanic task list. This list will be reviewed and revised at the next meeting in Denver, Colorado, August 13 and 14, 1979.

The meeting adjourned at 12:00 Noon on Tuesday, May 22, 1979.

AGENDA

PERFORMANCE STANDARDS COMMITTEE

August 13 - 14, 1979

Director's Room - Mezzanine
Plaza Cosmopolitan Hotel
Denver, Colorado 80202

MONDAY, AUGUST 13

9:00 AM	Convene - Introductions - Business
9:30 AM	Review Task List for additions, deletions, and modifications
12:00 Noon	Lunch
1:30 PM	Continue Task List Review - Small group work for Performance Standards Development
4:00 PM	Adjourn

TUESDAY, AUGUST 14

9:00 AM	Continue Performance Standards Development
12:00 Noon	Lunch
1:30 PM	Continue Performance Standards Development
3:30 PM	Wrap-up

MINUTES

PERFORMANCE STANDARD COMMITTEE

MEETING

DENVER, COLORADO

AUGUST 13-14, 1979

The meeting was called to order by Charles Losh at 9:00 A.M. Members present were: Hugh Dawkins, Jerry Kohl, Jerry Solberg, Bill Lundell, Tom Hinds, and M. H. Hunerwadel. Also present were: B. E. Childers, Project Coordinator and Charles Losh, Project director.

Mr. Losh welcomed the committee and reviewed the status of the project to date. The minutes of the previous meeting were reviewed for additions or deletions; there were none.

The method to be used in validation of the task list was reviewed, i.e., selecting a sample of NIASE certified mechanics to respond to the survey document. This activity will be carried out prior to the next meeting in January of 1980.

The committee discussed terminology used in the task list, "rebuild" vs "overhaul." Rebuild was chosen since it indicated bringing a unit up to manufacturers specifications.

The arrangement of catagories was discussed and Task List Draft III will reflect this restructuring activity.

The committee activities during the meeting included a review of the draft II task list, standards development and sequencing of tasks.

Performance standards development will continue and the remainder of the tasks will be sequenced at, or before, the next meeting of the committee. Individual work in this area will be accomplished where possible prior to the next meeting.

The committee will have its third meeting in Orlando, Florida, January 17 - 18, 1980.

AGENDA

PERFORMANCE STANDARDS COMMITTEE MEETING

ORLANDO, FLORIDA

January 16-18, 1980

THURSDAY, JANUARY 17

9:00 AM	Convene - Introductions
9:15 AM	Review project activities to date
9:30 AM	Future project activities
9:45 AM	Break
10:00 AM	Sequence tasks in remaining areas, add tasks if needed.
12:00 Noon	Lunch
1:00 PM	Continue task sequencing
2:45 PM	Break
3:00 PM	Develop performance standards for tasks in remaining areas.
5:00 PM	Adjourn

FRIDAY, JANUARY 18

8:30 AM	Convene, continue performance standards development.
9:45 AM	Break
10:00 AM	Reconvene
12:00 Noon	Lunch
1:00 PM	Continue standards development
2:45 PM	Break
3:00 PM	Wrap up activities
4:30 PM	Adjourn

May 1, 1979

Dear

The Commission on Occupational Education Institutions (COEI) is one of the four Commissions of the Southern Association of Colleges and Schools (SACS), the accrediting agency for the southeastern region of the United States.

The Occupational Commission has received a grant from the Motor Vehicle Manufacturers Association (MVMA) to develop a set of Standards for a voluntary evaluation system for motor vehicle mechanics training programs and to field test the system nationwide.

To assure national input into this development project, we are establishing a committee to review, assess, and develop mechanic training standards. The first and key committee is the Instructional Assessment Committee which will meet four times during the next two years (see attached material). We need your expertise on this committee. This letter is a formal request that you serve on this committee and assist us in this endeavor.

Your travel and lodging expenses will be reimbursed for all activities connected with the committee. The first meeting will be in Atlanta May 21st and 22nd, 1979. Please indicate your willingness to serve on this committee.

I look forward to working with you on this project for the improvement of vocational education.

Sincerely,

Charles Losh
MVMA Project Director

CL/pdw

Encl: Instructional Assessment Committee Sheet
PERT Chart
Definition Sheet

September 6, 1979

Dear .

Sorry I'm so slow getting this material to you but I wanted to do a little work on it before sending it out.

I went through and developed "Draft III" of the task list, sequencing those things I felt comfortable with, and leaving those other things for committee members to work on. As you can see, I have tried to get a handle on "test", "inspect", etc., even though I am not very comfortable with the distinction between check and inspect. I would prefer "inspect" throughout, but it seems cumbersome.

I have also worked on the performance standards we developed in Denver, establishing some wording which I think people will accept and find useful. If you could work on developing standards for the remaining tasks with which you are most familiar, using the ones we developed in Denver as a model, it would help me a lot. Send your results to me and I will combine them with those from other committee members where possible.

I'm going to Washington, D. C. the 7th of September to talk to the people at NIASE so we can go to survey with the task list ASAP.

As soon as I get time, I am going to send out copies of the materials (performance standard examples) to you for use as reference material in your standard development work. In the interim, you can check with some of your associates for their ideas on standards. Also, you might shop the task list around for things we may have missed.

In conclusion, I enjoyed working with you in Denver and am looking forward to Orlando in January.

Call me if you have questions or suggestions.

Sincerely,

Charles Losh
AMTEP Project Director

CL/pdw

P.S. The first field tests of the program standards will be the last week of September; I'll keep you informed.

Enclosures: Task List III
Tasks with Standards
Minutes

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 875-8011 Area Code 404 (404) 897-6155

January 2, 1980

MEMORANDUM

TO: Performance Standards Committee - AMTEP

FROM: Charles Losh, Director - AMTEP Chas.

SUBJECT: Committee Meeting - January 16 - 18, 1980

I have enclosed the agenda for our January meeting in Orlando. Please review the draft task list and develop a tentative sequence for the remaining tasks, also jot down some notes on performance standards for the areas we haven't worked in yet, if you have time.

This will be our last meeting until next August, which means we have a lot of territory to cover at this meeting!

I'm looking forward to seeing you in Orlando. If you won't be able to make it, please give me a call.

LODGING ARRANGEMENTS (Check in date - January 16, 1980)

Orlando Hyatt House
6375 Space Coast Parkway
Intersection I-4 & U.S. 192
Kissimmee, Florida 32741
(305) 846-4100

July 8, 1980

Dear

As you know, the automobile industry is experiencing a downturn, which is now effecting the project. We have not received our Phase III contract yet, but are expecting to be refunded. The funding level will be lower than originally anticipated however, so we will have to see the final dollar figure to do future planning. Therefore, we are canceling the Performance Standards committee meeting planned for August 13-14, 1980. We plan to reschedule it later, however, and I will be contacting you as to the date.

One thing I would like you to do is develop a tool and equipment list. Please develop a list of basic hand tools, applicable to all 8 NIASE areas, and then identify specific tools and equipment required for each of the eight areas. Once this information is developed, the visiting team members will have a guideline for tool and equipment review during the evaluation visits.

If you could have a basic list to me by September 1, I will compile the results and get it back to the committee members.

Hope your summer is going well!

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
  Evaluation Project (AMTEP)

Enclosure: Performance Standards - DRAFT

P.S. We finally got around to printing these standards! Please proof them and if you have corrections, send them to me.

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

Dear Sir:

As an automotive service technician/mechanic who has passed one or more NIASE Tests, you represent the most professional group of automotive service technicians in the country. Therefore, we need your help.

The Motor Vehicle Manufacturers Association of America is sponsoring the Automobile Mechanic Training Evaluation Project, designed to improve the quality of training offered to automobile service technicians across the nation. As a part of this project, we are surveying professionals to determine the tasks technicians and mechanics do on the job. This information will be used to develop technician/mechanic training courses in vocational schools and community colleges nationwide.

How can you help? Go through this survey task list and check (✓) the tasks you do. Your help will be appreciated.

Please complete the Survey, slip it into the postage paid return envelope and return to us by July 15, 1980. If you have any questions please call me collect.

Thank you for your help in this project.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
Evaluation Project (AMTEP)

Enclosures: Survey
First Annual Report, Executive Summary (AMTEP)
Return envelope -- Postage Paid

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
Phone 897-6156 Area Code 404

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT

- AMTEP -

AUTOMOBILE
TECHNICIAN/MECHANIC
SURVEY

JUNE, 1980

June 1, 1980

DATA SHEET

NAME____

ADDRESS____

____

EMPLOYER________________________ This is a ⬇

I am employed as an

____

____

____

____

(Examples would be, Alignment Specialist, General Mechanic, etc.)

A. 1[ ] Service Station
2[ ] Independent Repair Shop
3[ ] New Car/Truck Dealer
4[ ] Fleet Shop
5[ ] Specialty Shop
6[ ] Mass Merchandiser
[ ] Other____________________

B. I have worked for my present employer ______ years.

C. I have been an automobile mechanic for _____ years.

INSTRUCTIONS

STOP! READ THIS PAGE BEFORE GOING FURTHER

This survey is divided into eight sections, each one covering a specialty area or part of the automobile. Please put a check mark (✓) next to the area(s) you NOW work in or on, then go to those pages and finish the section according to the instructions on the next page. If you work in or on more than one area, please check all the areas you work on.

SECTION

Put a check mark (✓) next to area(s) of the automobile you work on NOW.

A ☐ Front End - Page 1
B ☐ Brakes - Page 4
C ☐ Heating & Air Conditioning & Cooling System - Page 6
D ☐ Engine Tune-up, Emission and Exhaust - Page 9
E ☐ Automatic Transmission - Page 14
F ☐ Electrical System - Page 16
G ☐ Manual Transmission and Rear Axle - Page 19
H ☐ Engine Repair - Page 21

GO TO THE NEXT PAGE

INSTRUCTIONS

Have you completed the Data Sheet on the front page?

Be sure you have before you continue with this procedure.

Check (✓)tasks you do on your present job, NOT all jobs you have had.

1. As you read each task in the area you are working on, place a check (✓) beside each task that you perform in your PRESENT job. Put your check mark in the column headed "Check if Done in Present Job."
2. If a task that you do is not listed anywhere in the speciality area you are checking or in any of the other specialty areas, please write it in the blank space at the end of the speciality area. Check tasks you do yourself, not tasks you supervise.
3. Please go to the first specialty area you checked on Page i and start. After you finish your first section, go to the next section you checked and check the tasks you do in that area.

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW

2. Add any task(s) in this area you do now which are not listed

AREA A: - FRONT END TASK(S)		Check if done in present job	Office use only
SUSPENSION			
1. Inspect suspension system for worn parts	(001)		1:14
2. R & R suspension bushings	(002)		1:15
3. Inspect tires and wheels for damage and irregular wear	(003)		1:16
4. R & R front wheel bearings (drum brakes)	(004)		1:17
5. R & R front wheel bearings (disc brakes)	(005)		1:18
6. Repack wheel bearings	(006)		1:19
7. R & R shock absorbers	(007)		1:20
8. R & R control arms	(008)		1:21
9. R & R ball joints	(009)		1:22
10. R & R torsion bar	(010)		1:23
11. R & R coil springs	(011)		1:24
12. R & R king pins	(012)		1:25
13. R & R spindle	(013)		1:26
14. R & R McPherson strut assembly	(014)		1:27
15. Rebuild McPherson strut assembly	(015)		1:28

16. R & R trunion pin assembly	(016)		1:29
17. R & R leaf spring assembly	(017)		1:30

STEERING SYSTEM

1. Inspect steering gear and linkage for worn parts	(018)		1:31
2. Check and service fluid level	(019)		1:32
3. Lubricate steering gear and linkage	(020)		1:33
4. Test tire pressure	(021)		1:34
5. Rotate tires	(022)		1:35
6. Balance wheel and tire assembly	(023)		1:36
7. Adjust steering sector	(024)		1:37
8. R & R steering linkage components	(025)		1:38
9. R & R manual steering sector	(026)		1:39
10. R & R steering damper	(027)		1:40
11. R & R power steering hoses	(028)		1:41
12. R & R belt/belts and set tension	(029)		1:42
13. R & R power steering cylinder	(030)		1:43

14. Rebuild power steering cylinder	(031)		1:44
15. R & R power steering control valve assembly	(032)		1:45
16. Rebuild power steering control valve assembly	(033)		1:46
17. R & R power steering pump	(034)		1:47
18. Rebuild power steering pump	(035)		1:48
19. Rebuild rack and pinion power steering assembly	(036)		1:49
20. Rebuild rack and pinion manual steering assembly	(037)		1:50
21. Adjust toe-in	(038)		1:51
22. Align front end	(039)		1:52
23. Align rear wheels	(040)		1:53
24. R & R turn signal switch	(041)		1:54
25. R & R ignition switch rack	(042)		1:55
26. R & R steering wheel	(043)		1:56
27. R & R Mast Jacket	(044)		1:57

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW

2. Add any task(s) in this area you do now which are not listed

AREA B: - BRAKES TASK(S)		CHECK if done in present job	Office use only
BRAKES			
1. Check brake operation	(045)		1.58
2. Inspect brake hoses and lines	(046)		1:59
3. Flush brake system	(047)		1:60
4 R & R brake hose	(048)		1:61
5. R & R brake line	(049)		1:62
6. Adjust brake shoes	(050)		1:63
7. Free-up parking brake cable and linkage	(051)		1:64
8. Adjust parking brake linkage	(052)		1:65
9. R & R parking brake cable and linkage	(053)		1:66
10. R & R parking brake external band	(054)		1:67
11. R & R brake shoes	(055)		1:68
12. R & R self-adjusters	(056)		1:69
13. R & R wheel cylinder	(057)		1:70
14. Rebuild wheel cylinder	(058)		1:71
15. Cam grind brake shoe	(059)		1:72

16. Grind (turn) brake drum	(060)		1:73
17. Recondition backing plate	(061)		1:74
18. R & R disc brake rotor	(062)		1:75
19. Reface disc brake rotor	(063)		1:76
20. R & R caliper assembly	(064)		1:77
21. Rebuild caliper assembly	(065)		1:78
22. R & R master cylinder	(066)		1:79
23. Rebuild master cylinder	(067)		1:80
24. R & R hydraulic power brake unit	(068)		2:01
25. R & R hydro-brake booster unit	(069)		2:02
26. Bleed brake system	(070)		2:03
27. R & R proportioning meter (combination valve)	(071)		2:04
28. Test brake anti-lock system	(072)		2:05
29. Replace defective components in brake anti-lock system	(073)		2:06

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW
2. Add any task(s) in this area you do now which are not listed

AREA C: - HEATING & AIR CONDITIONING & COOLING SYSTEM TASK(S)		CHECK if done in present job	Office use only
HEATING AND AIR CONDITIONING			
1. Inspect control cables	(074)		2:07
2. Test electrical control circuits	(075)		2:08
3. R & R compressor belts	(076)		2:09
4. Test vacuum components	(077)		2:10
5. R & R vacuum components	(078)		2:11
6. Test air conditioning thermal switch	(079)		2:12
7. Test blower motor	(080)		2:13
8. R & R blower motor	(081)		2:14
9. Test thermostatic clutch switch	(082)		2:15
10. R & R thermostatic clutch switch	(083)		2:16
11. Inspect air conditioning magnetic clutch switch	(084)		2:17
12. R & R air conditioning magnetic clutch assembly (piston type)	(085)		2:18
13. Inspect clutch and pulley assembly	(086)		2:19
14. R & R clutch and hub assembly (rotary type)	(087)		2:20

15. Test air conditioner charge	(088)		2:21
16. Charge system using pound cans	(089)		2:22
17. Charge system using bulk source	(090)		2:23
18. Perform leak test with halide torch	(091)		2:24
19. Perform leak test with electronic tester	(092)		2:25
20. R & R refrigerant lines	(093)		2:26
21. Fabricate refigerant lines	(094)		2:27
22. R & R compressor seals	(095)		2:28
23. Check compressor oil level	(096)		2:29
24. Inspect dryer	(097)		2:30
25. R & R dryer in air conditioning unit	(098)		2:31
26. R & R condensor in air conditioning unit	(099)		2:32
27. R & R evaporator	(100)		2:33
28. R & R measured orifice valve (expansion valve)	(101)		2:34
29. Test throttle-suctioning valve	(102)		2:35
30. R & R throttle - suctioning valve	(103)		2:36
31. Test compressor reed plates	(104)		2:37
32. R & R compressor reed plates	(105)		2:38
33. R & R compressor	(106)		2:39
34. Rebuild rotary compressor (swash-plate)	(107)		2:40
35. R & R heater core	(108)		2:41
36. Install air conditioner system	(109)		2:42

COOLING SYSTEM

1. Determine cause of overheating	(110)		2:43
2. Test thermal sensing switch	(111)		2:44
3. R & R thermal sensing switch	(112)		2:45
4. R & R drive belts	(113)		2:46
5. Test coolant freezing point	(114)		2:47
6. Install antifreeze	(115)		2:48
7. Inspect water hoses	(116)		2:49
8. Check variable speed fan clutch	(117)		2:50
9. R & R variable speed fan clutch	(118)		2:51
10. R & R drive belts	(119)		2:52
11. Chemically clean cooling system	(120)		2:53
12. R & R thermostat	(121)		2:54
13. Test thermostat	(122)		2:55
14. Test coolant pressure caps	(123)		2:56
15. Pressure test cooling system	(124)		2:57
16. R & R heater hoses	(125)		2:58
17. R & R radiator hoses	(126)		2:59
18. R & R radiator	(127)		2:60
19. Rebuild blower assembly on air-cooled engines	(128)		2:61

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW
2. Add any task(s) in this area you do now which are not listed

AREA D: - ENGINE TUNE-UP, EMISSION, AND EXHAUST TASK(S)		CHECK if done in present	Office use only
IGNITION SYSTEM			
1. Test ignition system using engine analyzer	(129)		2:62
2. Test point dwell	(130)		2:63
3. R & R distributor cap	(131)		2:64
4. R & R distributor rotor	(132)		2:65
5. Inspect distributor for worn parts	(133)		2:66
6. R & R points	(134)		2:67
7. R & R condensor	(135)		2:68
8. Test condensor	(136)		2:69
9. R & R distributor	(137)		2:70
10. Rebuild distributor	(138)		2:71
11. Test control unit (electronic)	(139)		2:72
12. R & R control unit (electronic)	(140)		2:73
13. Test pickup coil (electronic)	(141)		2:74
14. R & R pickup coil (electronic)	(142)		2:75
15. Test automatic spark advance mechanism	(143)		2:76
16. R & R automatic spark advance mechanism	(144)		2:77
17. Adjust point dwell	(145)		2:78

18. Test ignition timing	(146)		2:79
19. Adjust ignition timing	(147)		2:80
20. Test ignition coil	(148)		3:01
21. Test primary circuit resistance	(149)		3:02
22. Test secondary circuit continuity	(150)		3:03
23. Test spark plug wires resistance	(151)		3:04
24. R & R spark plug wires	(152)		3:05
25. R & R spark plugs	(153)		3:06
26. Clean spark plugs	(154)		3:07
27. Gap spark plugs	(155)		3:08

FUEL SYSTEM

1.	Test carburetor adjustment using combustion analyzer	(156)		3:09
2.	Test carburetor adjustment using infra-red tester	(157)		3:10
3.	Test carburetor adjustment using propane enrichment apparatus	(158)		3:11
4.	Adjust carburetor idle mixture	(159)		3:12
5.	Adjust anti-stall device	(160)		3:13
6.	Inspect carburetor linkage for binding and worn parts	(161)		3:14
7.	Check carburetor for vacuum leaks	(162)		3:15
8.	R & R carburetor air cleaner	(163)		3:16
9.	Check carburetor air cleaner element	(164)		3:17
10.	Clean carburetor air cleaner	(165)		3:18
11.	Clean automatic choke	(166)		3:19
12.	Adjust automatic choke	(167)		3:20
13.	Free up manifold heat riser valve	(168)		3:21
14.	R & R manifold heat riser valve	(169)		3:22
15.	Clean heat riser passages	(170)		3:23
16.	Adjust float	(171)		3:24
17.	Adjust carburetor metering rods	(172)		3:25
18.	R & R carburetor metering jets	(173)		3:26
19.	R & R carburetor	(174)		3:27
20.	Rebuild carburetor	(175)		3:28
21.	R & R fuel filter unit	(176)		3:29
22.	Test fuel pump	(177)		3:30

23. R & R fuel pump	(178)		3:31
24. Test fuel injection system	(179)		3:32
25. R & R electrical fuel injection computer	(180)		3:33
26. Test wiring harness of electronic fuel injection system	(181)		3:34
27. R & R wiring harness of electronic fuel injection system	(182)		3:35
28. R & R fuel injection nozzle	(183)		3:36
29. Rebuild fuel injection nozzle	(184)		3:37
30. R & R fuel injection pump	(185)		3:38
31. Rebuild fuel injection pump	(186)		3:39
32. Check waste gate adjustment	(187)		3:40
33. Adjust waste gate adjustment	(188)		3:41
34. R & R turbocharger	(189)		3:42
35. Rebuild turbocharger	(190)		3:43
36. R & R fuel lines	(191)		3:44
37. R & R gas tank	(192)		3:45
38. R & R fuel level sending unit	(193)		3:46

EMMISSIONS CONTROL SYSTEM

1.	Test emission control system using propane enrichment apparatus	(194)		3:47
2.	R & R vacuum hoses	(195)		3:48
3.	Test P.C.V. System	(196)		3:49
4.	R & R P.C.V. valve	(197)		3:50
5.	R & R P.C.V. valve hose(s)	(198)		3:51
6.	Test vacuum advance/retard device	(199)		3:52
7.	R & R vacuum advance/retard device	(200)		3:53
8.	Test electrical advance/retard device	(201)		3:54
9	Check idle solenoid	(202)		3:55
10.	R & R idle solenoid	(203)		3:56
11.	R & R deceleration valve	(204)		3:57
12.	Test thermostatic air cleaner	(205)		3:58
13.	Adjust thermostatic air cleaner	(206)		3:59
14.	R & R thermostatic air cleaner	(207)		3:60
15.	Check exhaust gas recirculation valve operation	(208)		3:61
16.	R & R exhaust gas recirculation valve	(209)		3:62
17.	Check air injection system	(210)		3:63
18.	R & R air pump	(211)		3:64
19.	R & R diverter and anti-backfire valve	(212)		3:65
20.	Test fuel evaporation system	(213)		3:66
21.	R & R closed system charcoal cannister filter	(214)		3:67

22.	Test back pressure of exhaust system	(215)		3:68
23.	R & R catalytic converter	(216)		3:69
24.	R & R beads in catalytic converter	(217)		3:70

EXHAUST SYSTEM

1.	Check exhaust system for leaks and restrictions	(218)		3:71
2.	R & R exhaust system supports	(219)		3:72
3.	R & R convertor beads	(220)		3:73
4.	R & R catalytic convertor	(221)		3:74
5.	R & R muffler	(222)		3:75
6.	R & R exhaust pipe	(223)		3:76
7.	R & R tail pipe	(224)		3:77
8.	R & R exhaust manifold	(225)		3:78

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW
2. Add any task(s) in this area you do now which are not listed

AREA E: - AUTOMATIC TRANSMISSION TASK(S)		CHECK if done in present job	Office use only
AUTOMATIC TRANSMISSION			
1. Pressure test transmission in car	(226)		3:79
2. Stall test automatic transmission in car	(227)		3:80
3. Clean transmission oil strainer	(228)		4:01
4. R & R transmission oil filter	(229)		4:02
5. Adjust automatic transmission shift linkage	(230)		4:03
6. Test vacuum shift modulator	(231)		4:04
7. R & R vacuum shift modulator	(232)		4:05
8. Adjust bands	(233)		4:06
9. R & R transmission governor	(234)		4:07
10. Clean transmission governor	(235)		4:08
11. Clean transmission valve body	(236)		4:09
12. R & R automatic transmission with convertor assembly	(237)		4:10
13. R & R automatic transmission without convertor assembly	(238)		4:11

14. Rebuild automatic transmission assembly	(239)		4:12
15. Measure convertor turbine end play	(240)		4:13
16. Air pressure test transmission on bench	(241)		4:14
17. Pressure flush convertor assembly	(242)		4:15
18. Pressure flush automatic transmission cooler assembly	(243)		4:16
19. R & R torque convertor	(244)		4:17
20. R & R extension housing seal and bushing	(245)		4:18
21. Splice cooler lines	(246)		4:19

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW
2. Add any task(s) in this area you do now which are not listed

AREA F: - ELECTRICAL SYSTEM TASK(S)		CHECK if done in present job	Office use only
ELECTRICAL SYSTEM			
1. Inspect battery electrolyte level	(247)		4:20
2. Test battery with hydrometer	(248)		4:21
3. Test battery for surface leakage	(249)		4:22
4. Test battery voltage	(250)		4:23
5. Test battery for capacity (load)	(251)		4:24
6. Clean battery, posts, and cable connections	(252)		4:25
7. Measure ground system resistance	(253)		4:26
8. R & R battery cables	(254)		4:27
9. Charge battery	(255)		4:28
10. Test charging system output	(256)		4:29
11. Test generator output	(257)		4:30
12. Test alternator output	(258)		4:31
13. R & R generator or alternator	(259)		4:32
14. Rebuild generator	(260)		4:33
15. Rebuid alternator	(261)		4:34
16. R & R charging system regulator	(262)		4:35

17. Test starter control circuit	(263)		4:36
18. Test starter current draw	(264)		4:37
19. R & R starter solenoid	(265)		4:38
20. Test electrical motors	(266)		4:39
21. R & R starter	(267)		4:40
22. Rebuild starter	(268)		4:41
23. Test switches	(269)		4:42
24. R & R switches	(270)		4:43
25. Test fuses	(271)		4:44
26. R & R fuses	(272)		4:45
27. Test circuit breakers	(273)		4:46
28. R & R circuit breakers	(274)		4:47
29. R & R fuse block assembly	(275)		4:48
30. Inspect lighting system for faulty bulbs	(276)		4:49
31. R & R light bulbs	(277)		4:50
32. R & R sockets	(278)		4:51
33. Adjust headlights	(279)		4:52
34. Test parking light circuit	(280)		4:53
35. R & R dimmer switch	(281)		4:54
36. Test turn signal circuit	(282)		4:55
37. R & R turn signal switch	(283)		4:56
38. Adjust backup light switch	(284)		4:57
39. R & R backup light switch	(285)		4:58
40. Adjust stop light switch	(286)		4:59

41. R & R stop light switch	(287)		4:60
42. Check horn circuit	(288)		4:61
43. Test horn relay	(289)		4:62
44. R & R horn relay	(290)		4:63
45. Test windshield wiper circuit	(291)		4:64
46. R & R windshield wiper motor	(292)		4:65
47. R & R windshield washer motor	(293)		4:66
48. Test constant voltage regulator	(294)		4:67
49. R & R constant voltage regulator	(295)		4:68
50. Test instrument gauges	(296)		4:69
51. R & R instrument gauges	(297)		4:70
52. Test sending units	(298)		4:71
53. R & R sending units	(299)		4:72
54. Test warning lamps	(300)		4:73
55. R & R warning lamps	(301)		4:74
56. Test instrument gauges	(302)		4:75
57. R & R instrument gauges	(303)		4:76

ELECTRICAL ACCESSORIES

1. Test cruise control unit	(304)		4:77
2. R & R cruise control components	(305)		4:78
3. Test automatic alarm system	(306)		4:79
4. R & R automatic alarm system components	(307)		4:80
5. Test radio power circuit	(308)		5:01
6. Inspect radio speaker	(309)		5:02
7. R & R radio speaker	(310)		5:03
8. Test radio antenna	(311)		5:04
9. R & R radio antenna	(312)		5:05
10. Trim radio antenna	(313)		5:06
11. R & R power antenna motor	(314)		5:07
12. R & R power window motors	(315)		5:08
13. R & R power seat motors	(316)		5:09
14. Test cigarette lighter circuit	(317)		5:10
15. R & R cigarette lighter receptacle	(318)		5:11

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW
2. Add any task(s) in this area you do now which are not listed

AREA G: - MANUAL TRANSMISSION AND REAR AXLE TASK(S)		CHECK if done in present job	Office use only
MANUAL TRANSMISSION			
1. Adjust shift linkage	(319)		5:12
2. Adjust manual clutch	(320)		5:13
3. Adjust hydraulic clutch free travel	(321)		5:14
4. [illegible] R extension housing seal and bushing	(322)		5:15
5. R & R manual transmission	(323)		5:16
6. Rebuild manual transmission	(324)		5:17
7. R & R pressure plate assembly	(325)		5:18
8. R & R clutch release bearing	(326)		5:19
9. R & R clutch release fork	(327)		5:20
10. R & R pilot bearing	(328)		5:21
11. R & R hydraulic clutch slave cylinder	(329)		5:22
12. Rebuild hydraulic clutch slave cylinder	(330)		5:23
13. R & R hydraulic clutch master cylinder	(331)		5:24

14.	Rebuild hydraulic clutch master cylinder	(332)		5:25
15.	Measure flywheel runout	(333)		5:26
16.	Replace flywheel	(334)		5:27
17.	Measure bellhousing runout	(335)		5:28

DRIVE LINES				
1.	Inspect drive line for worn parts	(336)		5:29
2.	Lubricate universal joint	(337)		5:30
3.	R & R universal joint	(338)		5:31
4.	R & R trunion joint	(339)		5:32
5.	Lubricate speedometer cable	(340)		5:33
6.	R & R speedometer cable	(341)		5:34
7.	R & R speedometer drive gear	(342)		5:35
8.	R & R axle seal	(343)		5:36
9.	R & R axle bearing	(344)		5:37
10.	Balance drive shaft (in car)	(345)		5:38
11.	R & R transmission mount	(346)		5:39
12.	Check drive line angles	(347)		5:40
13.	R & R differential assembly (integral)	(348)		5:41

14. R & R differential assembly (removable)	(349)		5:42
15. Rebuild differential assembly (integral)	(350)		5:43
16. Rebuild differential assembly (removable)	(351)		5:44
17. R & R trans-axle assembly	(352)		5:45
18. Rebuild trans-axle assembly	(353)		5:46
19. R & R front-drive axle assemblies	(354)		5:47
20. Rebuild 4-wheel drive locking hubs	(355)		5:48

AUTOMOBILE MECHANIC SURVEY

1. Check (✓) the tasks you do NOW
2. Add any task(s) in this area you do now which are not listed

AREA H: - ENGINE REPAIR TASK(S)	CHECK if done in present job	Office use only
ENGINE MECHANICAL DIAGNOSIS		
1. Test cylinder balance using engine analyzer (356)		5:49
2. Test cylinder leakage (357)		5:50
3. Inspect engine for vacuum leaks (358)		5:51
4. Inspect engine for oil leaks (359)		5:52
5. Inspect to determine cause of overheating (360)		5:53
6. Inspect cooling system for source of coolant loss (361)		5:54
7. Inspect valve train and guides for cause of malfunctions (362)		5:55
8. Inspect engine for source of mechanical engine noise (363)		5:56

ENGINE BLOCK

1. Steam clean engine	(364)		5:57
2. R & R core plugs	(365)		5:58
3. Test oil pump pressure	(366)		5:59
4. Test oil pressure relief valve	(367)		5:60
5. R & R motor mounts	(368)		5:61
6. R & R engine assembly	(369)		5:62
7. R & R oil pan	(370)		5:63
8. R & R rod bearing(s)	(371)		5:64
9. R & R piston(s)	(372)		5:65
10. R & R crank shaft	(373)		5:66
11. Inspect block for warp	(374)		5:67

CYLINDER HEAD AND VALVE TRAIN

1. Inspect for rocker arm lubrication	(375)		5:68
2. R & R intake manifold	(376)		5:69
3. Test valve lifters	(377)		5:70
4. R & R cylinder head	(378)		5:71
5. Inspect cylinder head for warp - cracks	(379)		5:72

6.	Rebuild cylinder head	(380)		5:73
7.	R & R harmonic balancer	(381)		5:74
8.	R & R timing chain or belt	(382)		5:75
9.	R & R timing gear	(383)		5:76
10.	R & R camshaft	(384)		5:77
11.	R & R camshaft bearings	(385)		5:78
12.	Adjust hydraulic valve lifters	(386)		5:79
13.	Adjust mechanical valve lifters	(387)		5:80

APPENDIX H

PERSONAL STANDARDS (CHARACTERISTICS)

SURVEY REPORT

LETTER TO EMPLOYERS

ENTRY LEVEL EMPLOYEE CHARACTERISTICS
IMPORTANT TO
EMPLOYERS OF AUTOMOBILE
MECHANICS/TECHNICIANS

- A SURVEY REPORT -

CHARLES LOSH

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5/12/81

EMPLOYER SURVEY

This report outlines the results of a survey of Employers of Automobile Mechanics conducted during the Automobile Mechanic Training Evaluation Project (AMTEP.) [1] This survey was conducted to provide information on the employee "personal characteristics" that employers feel are important in their employment decisions. In most instances, personal characteristics or attributes are not readily measurable, but fall into the cognitive or affective areas. The majority of the items are attitudinal, but some do deal with subject matter knowledge acquisition. The list of personal characteristics identified for this survey was developed with the assistance of the Personal Standards Committee (Appendix C), one of the three developmental committees of AMTEP.

The survey document (Appendix A, Page 8) was sent to 83 members of the Automotive Service Council (ASC), and 75 members of the National Automobile Dealers Association (NADA). The Automotive Service Council serves the business and technical interests of independent automotive repair facilities nationwide. The National Automobile Dealers Association is the national trade association for franchised new car dealers in the United States.

Of the 83 surveys sent to the ASC members, 42 were returned for a 59% rate of return. Of the 75 surveys sent to NADA members, 27 were returned for a 36% rate of return. Overall, the return rate was 44%.

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[1] For further information on this project contact ______________

The percent responding to each item was calculated on total returns, since most training programs serve both independents and dealers. The items on the survey results are sequenced from the "most important" to "least important." The rank of an item was determined by the percentage of employers that rated a characteristic as "2 - MUST HAVE this characteristic to be hired."

One added question was; "Does a beginning mechanic/technician need a basic hand tool set to be hired in your shop?" 90% of employers in this survey answered "yes" to this question.

A section was also available for adding items that the survey might have missed, or areas an employer wanted to emphasize. These responses are summarized in Appendix B, Page 10.

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RESULTS OF THE PERSONAL CHARACTERISTICS SURVEY

This table summarizes the results of the employer survey. The items are sequenced from highest to lowest percentages according to employer responses in the "must have" column.

Some items do not total 100% due to a lack of response to some items or because of rounding. The scale is as follows:

2 - MUST HAVE this characteristic to be hired

1 - NICE TO HAVE this characteristic to be hired

0 - NOT NECESSARY to have this characteristic to be hired

PERSONAL CHARACTERISTICS	0	1	2
	%	%	%
1. Is honest	0	0	100
2. Has the ability to learn	0	1	99
3. Has mechanical aptitude or inclination	0	3	97
4. Is dependable	0	4	96
5. Follows directions	0	4	96
6. Is willing to take directions	0	4	94
7. Has the desire to learn	0	7	93
8 Has basic reading skills	0	7	93
9. Follows company policies and procedures	0	12	87
10. Is punctual (gets to work on time)	0	15	85
11. Shows a desire to work on automobiles	0	16	84
12. Shows pride in work	0	19	81
13. Able to accept discipline	0	24	76
14. Has good work habits	3	19	76
15. Is loyal to the employer	0	25	75

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PERSONAL CHARACTERISTICS	0	1	2
	%	%	%
16. Is able to work with others	0	31	69
17. Uses time effectively	4	26	68
18. Has basic writing skills	1	34	65
19. Has a positive attitude	0	32	65
20. Shows pride in self	1	35	62
21. Has basic math skills	1	38	60
22. Knows how to use equipment and tools	6	35	59
23. Has patience	1	47	51
24. Has good personal habits	0	54	44
25. Has a good personal appearance	3	54	41
26. Has the ability to analyze a problem and correct it properly	9	51	40
27. Has the ability to work under pressure	7	54	38
28. Has the appropriate physical traits	10	59	29
29. Shows versatility in solving problems	4	68	26
30. Is able to talk with customers & other employees	3	74	24
31. Knows own strengths and weaknesses	13	68	18
32. Is certified by a school as an entry level automobile mechanic/technician	28	63	9
33. Has passed one or more NIASE tests	34	63	3

ADDED ITEM:

Does a beginning mechanic/technician need a basic hand tool set to be hired in your shop?

YES	90%
NO	10%

Some general observations about the results are as follows: The first and highest rated item —honesty— is something which can be emphasized in a training program, but the second and third item "the ability to learn" and "mechanical aptitude" are characteristics that the student brings to the program. Screening programs can identify these characteristics, and if desired, selection of candidates can be partially based on these attributes. One item that the educational program can effect is number eight - basic reading skills. If the student cannot read at the level required to interpret automotive service procedures and specification manuals, then he or she is not going to be a desirable employee to the employer. This basic discrepancy must be corrected prior to full-time entry into the training program.

Teaching reading however, is not the responsibility of the automotive instructor. Teaching reading is the responsibility of reading specialists, just as teaching auto mechanics is the responsibility of an automotive specialist. To ask either specialist to work in the other area is a waste of expertise, and in the long run may be detrimental to the student. For motivation purposes, the reading material should be related to the automotive field. This means that the specialists need to work together and be sure that the material is as related as possible.

Many of a student's "personal characteristics" can be and are modified in the training program. Items such as using time effectively, following procedures, having pride in ones work, following directions, being punctual and establishing good work habits are all traits which can be molded in the school setting. The instructor being a good example and emphasizing these and similar areas will help improve these characteristics in all students.

The most disturbing result is the low "must have" rating of certification of student competency by a school. If the reading is taken in the "nice to have" column, then there is a significant number (63%) of employers in the survey who feel that this characteristic makes a difference in their employment decision. The positive aspect of this is that if there were two applicants equal in other respects, the applicant with school certification would probably be employed. The figure of most concern is the percentage (28%) who indicated that certification by a school didn't matter or was "not necessary". These employers have either had bad or no experiences with automotive training program in their community. This means that each program has a responsiblity to interact with employers and insure that the students certified as competent by a school are actually competent. One or two had experiences with a school's product will end the possibility of employment of graduates from that school. Graduate success is the greatest advertisement of a programs quality.

In conclusion, this survey was conducted and the information compiled for the benefit of instructors and administrators. We recommend that the personal characteristic items which can be effected by the training program structure and operation be constantly reviewed. Also, the importance of characteristics such as honesty and dependability must be continuously emphasized during the period of formal training .

The administration must be sure that the students have an adequate hand tool set prior to entering the job market. Students also need to be tested and remediated where needed to insure that they can read at the level required to interpret automotive service and specification manuals prior to full program entry.

Programs must clearly identify what a student can or cannot do after receiving this training, and communicate that to employers.

Employment of trained, competent completors is the goal of vocational automotive programs. Consideration of the employers response to the personal characteristics in this survey will help meet that goal.

APPENDIX A

AMTEP

MECHANIC/TECHNICIAN EMPLOYER SURVEY

This list includes personal characteristics and qualities a mechanic/technician could or should have to be successful on the job. Please rate the importance of these items in your decision to hire entry level, apprentice or others with little or no experience as a mechanic/technician. Please use following scale:

2 - MUST HAVE this characteristic to be hired
1 - NICE TO HAVE this characteristic to be hired
0 - NOT NECESSARY to have this characteristic to be hired

PERSONAL CHARACTERISTICS	0	1	2
1. Has basic reading skills			
2. Has basic math skills			
3. Has basic writing skills			
4. Has the ability to learn			
5. Has the desire to learn			
6. Is punctual (gets to work on time)			
7. Is willing to take directions			
8 Follows directions			
9. Is able to talk with customers & other employees			
10. Has good personal habits			
11. Has good work habits			
12. Is loyal to the employer			
13. Is able to work with others			
14. Has a good personal appearance			
15. Knows how to use equipment and tools			

PERSONAL CHARACTERISTICS	0	1	2
16. Is certified by a school as an entry level automobile mechanic/technician			
17. Has passed one or more NIASE tests			
18. Has the ability to analyze a problem and correct it properly			
19. Uses time effectively			
20. Shows pride in self			
21. Shows pride in work			
22. Follows company policies and procedures			
23. Has mechanical aptitude or inclination			
24. Has patience			
25. Shows a desire to work on automobiles			
26. Has the ability to work under pressure			
27. Has the appropriate physical traits			
28. Knows own strengths and weaknesses			
29. Shows versatility in solving problems			
30. Has a positive attitude			
31. Able to accept discipline			
32. Is dependable			
33. Is honest			

Does a beginning mechanic/technician need a basic hand tool set to be hired in your shop?

YES ☐ NO ☐

If you have other items you think are important but are not covered, please list them.

____

____

____

1/20/81

APPENDIX B

EMPLOYERS COMMENTS:

1. A good attitude is Number 1
2. This list covers it nicely
3. Summary of above - if he has the attitude and mechanical aptitude we will teach him the skills.
4. Must have the capacity to learn new procedures to work on cars using advanced technology - electronics, fuel injection, diesel, etc.
5. Willing to do other type of work in shop if his work is slow.
6. The more complicated cars get the better the technician must be. We now need technicians on cars that were good enough for aircraft a few years ago.
7. Number 17 (Has passed one or more NIASE tests) not required at present, but as the program (NIASE) has been in operation a little more time I intend to make this a requirement. Any help from organizations such as yours can only serve to improve the automotive service industry and is appreciated by myself and those presently responsible for training mechnics.
8. Cleanliness around his work area, his tools, etc., is essential.
9. Should have the ability to pass NIASE test after being exposed to product for a period of 6 months.
10. Years of experience and past work record with reputable companies is important.
11. Would like to stress willingness to work and learn most important.

12. There is some inconsistencies between the questions and the skill levels. You specified all items might desire a 2 but could be initially lacking. You would hope to instill all these characteristics eventually in all employees.

13. The most important are: Character and attitude.

14. Entry level people need to realize they will not start out making a lot of money because they will not be able to produce even with school training.

15. Has the ability to manage (Profit or loss)

16. Employees need a better understanding of "You can just write it off." "I'll make it up on the next job", how much one stolen dollar costs a company, and how much one missed day of work costs a company, etc.

17. Refer to questions 20, 21, 22, and 33 (of the original survey). If he doesn't show these characteristics in the first week, all of the time, he walks. I train my mechanics to do only the finest workmanship and to know their limitations, and how to use tools and equipment as I would. But, I can not train honesty, cleanliness, and pride. Training: Most vocational-technical schools and high school training programs and equipment are 10-15 years behind. There must be a complete upgrading of the training programs and equipment. Most vocational-technical equipment update schedules are lacking. In order to train mechanics for today and tomorrows demands there must be the latest equipment and techniques used. Also, there should be an update and advance course offered each year.

18. I could have marked #2 on all of the characteristics but I have to be realistic. Maybe this is why we find difficulty in hiring technicians and/or apprentices?

19. In this area, the young mechanics (to be) are not taught many of the basic skills in regard to using their minds as a main tool. I find younger people will not take the time or effort to think before acting or speaking. I am in the 50 year age bracket and these standards listed in the survey were all in the catagory of "must have" when I was job hunting. Today young people are not taught these basics. When hiring today it gets very depressing - 75% to 85% of available possible employees fall into the above segment. Small automotive clinics cannot compete salary wise with big business.
20. I would like to comment on the ASC workbook - while very comprehensive it would be extremely helpful to have duplicate copies of the test enabling the student to find the correct answer (and thereby learn) when results are returned.
21. Many of the mentioned items are very important but are hard to evaluate until after the person is hired. If these traits do not develop rapidly, employment is short term or advancement is limited. One characeristic not mentioned is the desire and ability to continue the education process and stay current with developments in the field -- the willingness never to finish school.
22. It is very helpful to the apprentice if he is able to accept criticism without getting upset. Most shop foremen are not teachers; they teach by telling what was done wrong.
23. I firmly believe in voluntary certification but at this time it would be foolish to require or request it.
24. It has been my observation that high school drop outs, unless highly motivated and a latent talent, will not succeed in the very technical areas of service.

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APPENDIX C

AMTEP PERSONAL STANDARDS COMMITTEE

Mr. John Locklar, Service Manager
Sunrise Oldsmobile-Toyota
340 North Beach
Daytona Beach, Florida 32014

Mr. Don Hall
Atlanta Area Technical School
1560 Stewart Avenue S.W.
Atlanta, Georgia 30310

Dr. Walter Oyler
Coordinator of Motor Vehicle
Technology
Grayson County College
P.O. Drawer 979
Denison, Texas 75020

Mr. Herb Dale
Automotive Instructor
Area Vocational-Technical School
Box 130
Morristown, Tennessee 37814

Mr. Robert Sigel
Director of Aprenticeship and Training
Automotive Service Councils, Inc.
188 Industrial Drive, Suite 112
Elmhurst, Illinois 60126

Mr. Bryan Harris
Stephens Imports, Inc.
2001 St. Charles Avenue
New Orleans, Louisiana 70130

Mr. Stan Hatcock
Webster Garage
231 Sampson Street N.E.
Atlanta, Georgia

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

DATE: January 30, 1981

TO: Employers of Automobile Mechanic/Technicians

FROM: Charles Losh, Director
Automobile Mechanic Training Evaluation Project (AMTEP)

SUBJECT: Automobile Mechanic/Technican Personal Characteristics Survey

As an employer of automobile mechanic/technicians, I am asking for your help in a project we are conducting for the Motor Vehicle Manufactuers of America (MVMA). The name of the project is the Automobile Mechanic Training Evaluation Project (AMTEP). The purpose of the project is to establish standards and develop other materials to be used to improve the quality of automotive training programs in our schools.

You have to make daily employment decisions which effect your business, and we would like to be able to tell people in the schools how employers rate the personal characteristics on the enclosed survey. Please complete this survey and return it to me in the enclosed envelope.

I have enclosed a draft copy of the 2nd Annual Report, Executive Summary for your information. If you have questions about the survey or other observations and comments on the project, please feel free to write or call.

Thank you for your help in this effort to improve vocational automotive training programs.

Enclosures: Personal Characteristics Survey
2nd Annual Report, Executive Summary - DRAFT

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
Phone 897-6156 Area Code 404

AMTEP

MECHANIC/TECHNICIAN EMPLOYER SURVEY

This list includes personal characteristics and qualities a mechanic/technician could or should have to be successful on the job. Please rate the importance of these items in your decision to hire entry level, apprentice or others with little or no experience as a mechanic/technician. Please use following scale:

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9. Is able to talk with customers & other employees			
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PERSONAL CHARACTERISTICS	0	1	2
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21. Shows pride in work			
22. Follows company policies and procedures			
23. Has mechanical aptitude or inclination			
24. Has patience			
25. Shows a desire to work on automobiles			
26. Has the ability to work under pressure			
27. Has the appropriate physical traits			
28. Knows own strengths and weaknesses			
29. Shows versatility in solving problems			
30. Has a positive attitude			
31. Able to accept discipline			
32. Is dependable			
33. Is honest			

Does a beginning mechanic/technician need a basic hand tool set to be hired in your shop? YES ☐ NO ☐

If you have other items you think are important but are not covered, please list them.

1/20/81

APPENDIX I

PERSONAL STANDARDS COMMITTEE MEMBERS AGENDA, MINUTES AND COMMUNICATION

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT

PERSONAL STANDARDS COMMITTEE

PROJECT COORDINATOR

Dr. B. E. Childers, Executive Director
Commission on Occupational Education Institutions
Southern Association of Colleges and Schools
795 Peachtree Street N. E.
Atlanta, Georgia 303038

PROJECT DIRECTOR

Mr. Charles Losh, Project Director
Automobile Mechanic Training Evaluation Project (AMTEP)
Commission on Occupational Education Institutions
Southern Association of Colleges and Schools
795 Peachtree Street N. E.
Atlanta, Georgia 30308

INDUSTRY PLANNING COUNCIL REPRESENTATIVE

Mr. Myron Appel
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Laguna Niguel, California 92677

PERSONAL STANDARDS COMMITTEE MEMBERS

Chairman
Dr. Walter Oyler
Coordinator of Motor Vehicle Technology
Grayson County College
P.O. Drawer 979
Denison, Texas 75020

Mr. John Locklar, Service Manager
Sunrise Oldsmobile-Toyota
340 North Beach
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Mr. Don Hall
Atlanta Area Technical School
1560 Stewart Aveue S.W
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Mr. Herb Dale
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Mr. Bryan Harris
Stephens Imports, Inc.
2001 St. Charles Aveque
New Orleans, Louisiana 70130

Mr. Stan Hathcock
Webster Garage
231 Sampson Street N.E.
Atlanta, Georgia

AGENDA

AMTEP PERSONAL STANDARDS COMMITTEE MEETING

MARCH 31 - APRIL 1, 1980

ATLANTA, GEORGIA

MONDAY, March 31

9:00 A.M.	Convene Introductions..........B. E. Childers
9:15 A.M.	Project Background.....B. E. Childers
9:30 A.M.	Project Overview.......Charles Losh
10:00 A.M.	Outline of Committee Activities and Responsibilities
10:15 A.M.	Appoint Chairman
10:30 A.M.	Break
10:45 A.M.	Initiate Material Review
12:00 NOON	Lunch
1:30 P.M.	Reconvene Continue material review/initiate personal standards list development
2:45 P.M.	Break
3:00 P.M.	Continue development
4:30 P.M.	Adjourn

MINUTES

PERSONAL STANDARDS COMMITTEE

MEETING

MARCH 31 - APRIL 1, 1980

The meeting was called to order by Charles Losh at 9:15 A.M. Members present were: John Locklar, Don Hall, Walter Oyler, Herb Dale, Bryan Harris and Robert Sigel. Also present were: Charles Losh, Project Director and Patti Williams, Project Secretary.

The committee was welcomed by Mr. Losh and introductions were made with each committee member providing a brief statement of personal data.

Mr. Losh gave a brief summary of the purpose of the project along with information relating to the two projects presently sponsored by the Commission on Occupational Education Institutions; AMTEP and V-TECS.

The committee was given a general outline of the project and the three existing committees; Performance Standards Committee, Program Standards Committee, and Personal Standards Committee. He explained the function and purpose of each of these committees as well as the current status of the material developed by each.

The members of the Personal Standards Committee were provided copies of documents developed by the other committees and an explanation of the purpose each of these documents serves.

The committee was informed that the program standards are in the process of validation by field test through site visits. Site visit procedures were explained by Mr. Losh, as well as procedures for selecting these sites and persons serving as team members.

Site visits have been made in 14 different states, involving three different levels of training.

There are three possibilities for implementing the material developed by AMTEP, (1) through presently existing accrediting agencies, (2) through AVA, and (3) through the creation of a separate accrediting agency for automobile mechanic training.

The program standards document was reviewed by the committee and areas of major concern and problems which have been encountered during site visits were emphasized by Mr. Losh. Various committee members pointed out that many of the problems encountered are due to local state laws which prevent the schools from fully enforcing some standards.

Mr. Losh discussed with the committee what their responsibilities would be toward developing personal standards for entry into and advancement in the field of automobile mechanics.

Mr. Losh recommended Dr. Walter Oyler to serve as chairman of this committee due to his experience in this area. The committee members were in unanimous agreement.

Mr. Losh shared with the committee materials received from various states relating to desired personal standards of automobile mechanics. Dr. Oyler suggested that each member of the committee develop their own list and then compare with material received, and then merge into one list. Thirty nine (39) potential personal standards were developed by the committee.

The committee will reconvene next year to finalize the list of standards.

The meeting adjourned at 11:45 A.M., April 1, 1980.

Attachment: Potential Personal Standards

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 875-8011 Area Code 404

January 30, 1980

Mr. John Locklar, Service Manager
Sunrise Oldsmobile-Toyota
340 North Beach
Daytona Beach, Florida 32014

Dear Mr. Locklar:

Thank you for agreeing to participate in the Automobile Mechanic Training Evaluation Project (AMTEP) as a member of the Personal Standards Committee. This committee will develop an itemized personal standards list, which will be validated by employers of automobile mechanics. Two meetings will be required in 1980 and in 1981.

A personal standard is "an attribute or characteristic of an individual which facilitates entry into and advancement in the automobile service industry." (Examples of personal standards are "Gets to work on time", cooperates with fellow employees", etc. The immediate goal is to identify and then to rank these characteristics from most to least important, through a survey of employers.

Included are various materials about the project, along with examples of materials developed by the other committees. The materials are all "DRAFT" at this time. Please review the materials and we will discuss them and answer questions when we meet.

Our first meeting will be held March 31 and April 1, 1980, in Atlanta. We will make hotel reservations for you on the 30th and 31st but you will need to make your own travel arrangements to Atlanta; we suggest doing this as soon as possible to take advantage of any special fares, etc. If you wish to stay in Atlanta longer than the two day, we will extend your reservations upon request. You will be reimbursed for all expenses directly related to your attendance at the meeting.

Please drop us a note regarding your participation as soon as possible. If you have any questions please contact us.

We look forward to working with you for the improvement of vocational education.

Sincerely,

B. E. Childers, Executive Director
Commission on Occuaptional Education
Institutions (COEI)

Charles L. Losh, Director
Automobile Mechanic Training
Evaluation Project (AMTEP)

Enclosures: First Annual Report - AMTEP
Brochure
Program Standards
Mechanic Task List

April 7, 1980

Dear

Thank you again for your assistance at the meeting last week. Your contributions were very helpful.

I have taken the personal standards list generated by the committee and modified it slightly by adding "has", "knows", or "is", to the items. I also broke out items (1, 2, and 3 from the early #1), since these are different and a person could have one without the others. As I reviewed the list there seemed to be some repetition, so I would like to have your feelings on eliminating the duplicated items. (See #7, #20- they might not understand what a "motor" skill is--also, others you feel may be a duplication.) Numbers 31 and 34 are not clear.

I have also included basic instructions to the person who will be responding to the survey. I am wondering however, if a 1-2-3-4 scale would be better? (1-critical, 2-necessary, 3-desirable, 4-not necessary). Think about this and let me know.

Once again, thanks for your help and I'm looking forward to hearing from you.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
 Evaluation Project (AMTEP)

CL/pdw

Enclosures: Draft II, Personal Standards List
Minutes of Meeting March 31 - April 1, 1980

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

June 2, 1981

LETTER SENT TO PERSONAL STANDARDS COMMITTEE
JUNE 2, 1981

I have enclosed a draft copy of the Personal Characteristic Survey Response Report for your information. If you have observations or comments on this report, please let me know.

We still do not know who will ultimately have responsibility for implementing the program certification process. Several national agencies have been contacted about the possiblities of accepting the responsibililty for the program certification process however, so we remain optimistic about implementation.

I will keep you informed, and once again, thank you for your help on the project.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
Evaluation Project (ATMEP)

CL/pdw

Enclosure: Personal Characteristics Survey Response Report

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
Phone 897-6156 Area Code 404

APPENDIX J

INDUSTRY PLANNING COUNCIL MEMBERS

5/4/81

INDUSTRY PLANNING COUNCIL

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Dr. Jack Sampson, Educational Co-Chairman
Department of Energy and Transportation
University of Wisconsin - Stout
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District Service Engineer
Ford Customer Service
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Pico Rivera, California 90660
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Administrator, Proficiency
and Testing
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Mr. William A. Dennis
Education Program Specialist
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Program Planning & Assessment
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Pontiac, Michigan 48054
Phone: 313/858-2007

Mr. George Kahl
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Mr. Harry Boughton, Chairman
Diesel Technology Department
Michael J. Owens Technical College
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Toledo, Ohio 43699
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Mr. John Brandt, Senior Program Specialist
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Ms. Lillian B. Bates
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Mr. Mel Chesney (Ex Officio)
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APPENDIX K

EXECUTIVE COMMITTEE MEMBERS

AGENDA, MINUTES AND COMMUNICATION

4/20/81

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
(AMTEP)
EXECUTIVE COMMITTEE

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Special Training Programs
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Mr. Cecil Brewer, Jr.
Assistant Dean
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Larry Fanucchi, Professor
Industrial Education Department
Bakerstield Community College
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Dr. James Hanneman
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Mr. M. H. Hunerwadel
Automotive Service Manager (Retired)
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Atlanta, Georgia 30318

Mr. Ron Ragazzi, Chief
Technical Training Section
National Center for Motor Vehicle
Emission Control and Safety
Department of Industrial Science
Colorado State University
Fort Collins, Colorado 80523

AGENDA

AMTEP EXECUTIVE COMMITTEE MEETING
SOUTHERN ASSOCIATION CONFERENCE ROOM
ATLANTA, GEORGIA
MAY 21-23, 1981

THURSDAY, MAY 21

11:00 A.M.	Convene -- Introductions -- Meeting Goals
11:15 A.M.	Project Overview/Status
12:00 NOON	Lunch will be catered in the conference room
1:00 P.M.	Review/Revise Program Standards and Evaluation Guide
2:30 P.M.	Break
4:30 P.M.	Adjourn

FRIDAY, MAY 22

8:30 A.M.	Convene (Rolls & Coffee)
8:45 A.M.	Finalize Program Standards and Evaluation Guide
10:15 A.M.	Break
10:30 A.M.	Discuss Program Certification Criteria
11:45 A.M.	Lunch
1:00 P.M.	Review Sample Visiting Team Report
2:30 P.M.	Break
2:45 P.M.	Discuss Self-Study Verification Activities
4:30 P.M.	Adjourn

SATURDAY, MAY 23

9:00 A.M.	Convene (Rolls & Coffee)
9:15 A.M.	Review Certification Agency Functions and Operation
10:30 A.M.	Break
10:45 A.M.	Discuss Plans for Future Activities
12:00 NOON	Adjourn

AMTEP EXECUTIVE COMMITTEE
MEETING MINUTES
MAY 21 - 23, 1981
ATLANTA, GEORGIA

The first meeting of the AMTEP Executive Committee was called to order at 11:00 a.m., Thursday, May 21st by Mr. Charles Losh, Project Director. Those present were: Louis Bridenstine, Cecil Brewer, Larry Fanucchi, James Hanneman, M.H. Hunderwadel, Tom Parks (substituting for Lillian Bates) and Ron Ragazzi. Absent was: Burke Grosse. Staff members present were: Charles Losh, Project Director, B. E. Childers, AMTEP Project Coordinator and Executive Director, Commission on Occupational Education Institutions, and Patti Williams, Secretary.

Mr. Losh welcomed the committee members and stated that the primary objective of this committee meeting was to finalize the Program Standards and related materials developed by various AMTEP committees. He indicated there was a need for discussion of items which are critical for certifying the quality of training programs. The committee will also review a sample visiting team report to determine if enough information is contained to certify the quality of a program. The Executive Committee will be responsible for finalizing the program self-study and validation processes.

Other items listed on the agenda for discussion were the identification of an implementation agency and plans for future AMTEP activities.

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Introductions were made and each committee member provided a brief summary of his background and related interest in the improvement of automotive training programs.

The contents of the meeting packets were reviewed and a brief explanation relating to each document was given by Mr. Losh. He stated that the project is approaching the end of the developmental phase, and final draft copies of the Performance and Program Standards materials have been completed and submitted to the respective committee members for final review. The committee review should be complete and any comments forwarded to his office by June 15. The Personal Standards are also complete, except for final review by the committee. Another document yet to be developed is a guide for mini team evaluations.

Mr. Losh stated that "upon completion of the project we will have procedures and materials for the evaluation of automobile mechanic/technician training programs." Basic materials for curriculum development and evaluation will include a set of Performance, Program, and Personal Standards.

Thirty-two training programs have been visited by AMTEP; no further visits are anticipated due to a lack of time and funds. Mr. Losh participated as an observer with three other regional accrediting agencies to determine if their reports could be used to determine the quality of an automotive training program. His response was "no" because the site visit procedures and reports of these agencies indicate that when standards do exist, they are usually generic. Specific standards are not used to evaluate each program, and this is imperative when evaluating an automotive (or other) program.

Draft III of the Program Standards and Evaluation Guide were reviewed by the committee. It was the consensus of the group that a program must be measured by the standards and must meet each standard precisely. If not, then we (the certifying agency) must know the specific reason for not meeting the standard.

There was considerable discussion relative to the various levels of training; (1) Basic, (2) Intermediate, (3) Upgrading and what specific tasks each level should cover.

The suggestion was made that a definition sheet should be developed for terms such as, performance based, criterion referenced, and other terms which are usually defined on an ad-hoc basis.

The self-study verification activities, program standards, evaluation guide, and self-study were discussed at this time. It was noted that the self-study items are the same as those in the evaluation guide and that the instruction sheet for the team member and school is the only difference. The school responds to the self-study items and the visiting team member then verifies that there is physical evidence which supports the information provided in the self-study.

It was determined that it would take a minimum of two people to perform an on site evaluation visit to avoid biased opinions. The self-study verification must be conducted on site and not by mail, and the duration of a site visit will be two days. The sequence of events will be, (1) Dinner or breakfast with faculty, (2) evaluation conducted for two days, (3) oral report to administration at conclusion of visit, and (4) written report to the institution.

During the discussion on program certification activities it was determined that the "seal of approval" will indicate that this is a quality instructional program which meets the program goals and performance objectives. The committee discussed whether or not this "seal of approval" should also indicate levels of training; basic, intermediate, or advanced. The committee consensus was that only one level, SPECIALIST, would be certified and each specialty area of instruction should be certified individually, rather than the overall program. The curriculum in each certified specialty training area must include all of the appropriate tasks in the AMTEP applicable task list specialist area.

The Executive Committee members will review the task list and indicate which of these tasks should be mandatory and which are optional in all eight areas. The list will then be returned to the AMTEP office to be compiled. All mandatory tasks in an area must be taught and this instruction verified on site for a program specialty area to be certified. It was also determined by this group that the task list must be reviewed and updated annually.

If a school teaches all eight specialty areas, but requests certification in only three of these areas, the program will do a self-study and have an on site visit. Certification will be issued to only those three areas (if the standards are met) and not the overall program. If a school teaches all eight areas but fails to meet the established standards, then only the areas meeting the standards will be certified.

During the meeting of the Executive Committee, substantive changes were made in both the Program Standards and the Evaluation Guide. These changes will be reflected in DRAFT IV of each document.

The implementation of the project was discussed, with Louis Bridenstine indicating that the Industry Planning Council (IPC) felt the best way to implement the project would be to identify a nationally recognized body or association who could conduct the implementation, since they (IPC) cannot do so themselves. Three agencies were identified to possibly coordinate the implementation of the project. (1) The National Institute for Automotive Excellence, (NIASE), The American Vocational Association (AVA), and National Center for Vocational Education.

The organization that does assume responsibility for implementation would not set the policy. Policy would be set by a new Advisory Board and staff to coordinate the implementation of the project through 2 - 3 methods. An example of implementation would be through one of the existing regional accrediting agencies.

The sponsor of the project, The Motor Vehicle Manufacturer's Association of the United States, Inc. (MVMA), proposes that all rights to this project be owned and maintained by them. They cannot, however, conduct the implementation themselves due to financial restraints. MVMA will, however, control the use of these materials and retain the right to withdraw their materials if the certification of programs is not handled to their satisfaction.

It was the concensus of the group that Charles Losh serve as acting chairman of the Executive Committee until the project is turned over to a specific organization for implementation.

The meeting adjourned at 12:00 Noon, May 23.

6/3/81

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

May 27, 1981

LETTER SENT TO AMTEP EXECUTIVE COMMITTEE ON 5/27/81

Dear :

I hope your trip home was easy and you were able to enjoy a little of the holiday. Once again, I would like to thank you for your help last week, and am sorry I was not able to be there Friday. Marcia and the baby are fine, and the baby is serene, no big problem at night!

We went through the standards materials and the enclosed DRAFT Standards reflects the changes the committee made.

The requirement of the inclusion of specific tasks in the curriculum is the most substantive change in the standards. This standard does go beyond the original concept, and will substantially impact the training programs. I do agree with the change, however, and feel this tightens up the standards significantly.

After review of the standards material, I would make the following recommendations for your review and response:

1.1 The rating of this standard should be a (2), since inserting the words "may or could" (3) destroys the intent of the standard.

2.1 The word "demonstrated" needs to be added between "of" and "competency". Also add -- "These would include one or more of the certified program specialty service areas." Delete "(See Standard...)"

2.2 Suggest a change to a (2), "should."

2.5 The requirement of an employed automobile mechanic/technician should be added to the advisory committee membership for technicial input.

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
Phone 897-6156 Area Code 404

3.3 Suggest a change to a (2), "should."

4.1 Suggest a change to a (2), "should."

6.5 Suggest that 6.5 (a) be deleted as is and changed to -- "The automobile diagnosis, service, and repair tasks designated "high priority" in the AMTEP Task List (1981) must be included in each certified area of automobile service instruction."

"Additional tasks may be added to meet the needs of local employers. All additional tasks must be approved by the program advisory committee."
Also, delete the last two lines of 6.5 (b). This would be covered in the new 6.5 (a).

I feel this change in 6.5 is critical so there are no misunderstandings about this requirement. Flexibility to meet local needs is also available, however, with the "may" statement.

Some internal changes and an additional unit dealing with program certification will be needed in the docment titled A Task List, Tool List and Structural Guide for Automobile Mechanic/Technician Training Programs (DRAFT). I will work on this and get it to you as soon as possible.

Please review DRAFT IV of the Program Standards and also identify the "high priority" items in the task list as soon as possible. I would like this material back by June 10th at the latest. This material needs to be complete by June 30th to meet our contractual obligation.

If you have questions please give me a call.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
Evaluation Project (AMTEP)

CL/pdw

Enclosure: Program Standards, DRAFT IV

CC: Dr. B. E. Childers

APPENDIX L

STATE-OF-THE-ART COMMUNICATIONS
MATERIALS RECEIVED
INSTITUTIONS RESPONDING

COPY OF LETTER SENT TO
STATE VOCATIONAL AGENCIES

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 875-8011 Area Code 404

The Commission on Occupational Education Institutions (COEI) is one of the four Commissions of the Southern Association of Colleges and Schools (SACS), the regional accrediting body for the southeastern region of the United States.

The Occupational Commission has received a grant from the Motor Vehicle Manufacturers Association to develop a voluntary evaluation system for motor vehicle mechanics training programs and to field test the system nationwide.

As an initial step in this project, we are researching available Performance Standards and Program Standards used for establishing, conducting and/or evaluating secondary and post-secondary Auto Mechanics training programs.

Since this project will involve a field test of the evaluation system, we will select a representative national sample of Auto Mechanics training programs for voluntary participation in the project. In order to select this sample, we need the names and addresses of post-secondary institutions in your state which have automotive mechanics training programs leading to gainful employment in the automotive field which we can contact for participation in this program.

To assist us in this task, we would appreciate your taking the time to forward us materials in the performance and program standards areas and a listing of schools offering Auto Mechanics training programs. Please complete the enclosed information card and return it to us upon receipt.

Sincerely,

B. E. Childers, Executive Secretary
Commission on Occupational Education
Institutions

Charles Losh, MVMA Project Director

Enclosure

BEC/CL/pdw

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 875-8011 Area Code 404

TO:

FROM: Charles Losh, MVMA Project Director

SUBJECT: Evaluation Project for Motor Vehicle Mechanic Training

The Commission on Occupational Education Institutions (COEI) is one of the four Commissions of the Southern Association of Colleges and Schools (SACS), the regional accrediting body for the southeastern region of the United States.

The Occupational Commission has received a grant from the Motor Vehicle Manufacturers Association to develop a voluntary evaluation system for motor vehicle mechanic training programs and to field test the system nationwide.

As an initial step in this project, we are researching available "Performance Standards" and "Program Standards" used for establishing, conducting and/or evaluating secondary and post-secondary Auto Mechanic training programs.

To assist us in this task, we would appreciate your taking the time to forward copies of "Performance Standards" used in your motor vehicle mechanic training programs and "Program Standards" used by your agency in evaluating training programs of this type.

Thank you for your cooperation in providing these materials for the improvement of vocational education.

PLEASE CHECK ONE OF FOLLOWING, SIGN AND RETURN.

☐ We have materials available

☐ We are forwarding copies

☐ We have nothing available

☐ We refer you to following person: ______________________________

October 5, 1979

Dear Fellow Vocational Educator:

Thank you for your contribution of materials for the standards state-of-the-art research for the Automobile Mechanic Training Evaluation Project (AMTEP).

AMTEP is administered by the Commission on Occupational Education Institutions, one of the four accreditation commissions of the Southern Association of Colleges and Schools of Atlanta, Georgia. Project funding is provided by grants from the Motor Vehicle Manufacturers Association of the United States, Inc. The project started in January, 1979 and is scheduled for completion in 1981.

The purpose of AMTEP is to develop evaluative criteria needed for the accreditation of automobile mechanic training programs. This project is national in scope and involves automobile mechanics and supervisors, instructors, vocational education administrators, evaluators, and others in a concerted effort to improve the quality of automobile mechanic training programs. Improved training should, of course, result in improved service to consumers.

Project activities will be conducted in three phases. Phase I included state-of-the-art research, initial identification of performance standards, and project start-up activities. Phase II and III involve the development, validation, and revision of evaluative criteria. These criteria will be employed in a process of self-study and external evaluation. Phase II, now under way, will include field tests at six sites then later at 20 sites. Phase III will include the final validation of the criteria at 50 sites throughout the United States.

At this time we are soliciting potential field test site candidates across the nation. We would like to consider your automobile mechanic training program as a potential test site during Phase II or Phase III.

As a validation site, your initial activities would involve the following:

1) Completion of a self evaluation instrument (requiring a maximum of four hours to complete) provided to you prior to the team visit. Additional material relative to the criteria developed would also be provided which will assist you in self improvement.

2) Hosting a two member site team for two days at no cost to your institution. A staff member would also accompany the team. The team would meet with program faculty, students, advisory committee members, and administration. At the conclusion, a statement of findings would be presented to the staff. No special arrangements need to be made for the team except to alert the staff and students about the site visit.

3) At a later date, an instructor from your program may be asked to participate on other visiting teams to another program, at no cost to your institution.

If you are interested in having your automobile mechanic training program considered as a potential test site, please contact me. In your letter, please include information on your program level, enrollment, staff, and other information which will help us in our site selection.

We are looking forward to working with you and your school for the furtherance of vocational education.

If you have any questions, please call me.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
Evaluation Project

Enclosures: First Annual Report
Brochures (5)

MATERIALS RECEIVED RELATING TO POTENTIAL-AMTEP-PERFORMANCE STANDARDS

1. Proficiency Rating - Alabama
2. American National Standard for Training of Automotive Mechanics for Passenger Cars and Light Trucks (ANSI D18.1 - 1972)
3. American National Standard for Training of Automotive Mechanics for Buses, Heavy Trucks, and Truck Trailers (ANSI D18.2 - 1972)
4. Automotive Articulation List of Tasks to Develop Competency— Arizona
5. Automotive Mechanic Entry Level Tasks - Colorado
6. Minimum Student Performance Standards - Auto Mechanics - Florida
7. Entry Level Performance Standards - Auto Mechanics - Florida
8. Individual Student Progress and Achievement Record - Automotive Mechanics - Georgia
9. Engine Repair Course - Advanced - Guam
10. Steering and Suspension - Intermediate - Guam
11. Student Employability Profile - Automotive - Guam
12. Demonstrated Competence - Illinois
13. Job (Benchwork) - Performance Objectives (Louisiana)
14. Related Shop Work - Maine
15. Auto Mechanics Task Analysis - Maryland
16. Role Definition & Job Task Identification for Automobile - Light Truck Mechanics - Michigan
17. Tasks for Automotive Mechanics - Michigan
18. Tasks List - Michigan
19. Automotive Mechanics Standards of Performance - Mississippi
20. Learning Experience/Achievement - Mississippi
21. Curriculum Development/Automotive Service Occupations - New York
22. Articulated Instructional Objectives Guide for Automotive Mechanics - North Carolina

23. Task/Activity Analysis - Ohio
24. Automobile Mechanic Task Description - Oregon
25. Skills Proficiency Rating - South Carolina
26. Student Profile for Auto Mechanics - Texas
27. Performance Standards - Texas
28. Automotive Competency Based Curriculum - West Virginia
29. National Institute for Automotive Service Excellence- Text Specifications for Engine Repair
30. National Institute for Automotive Service Excellence - Test Specifications for Automatic Transmission
31. National Institute for Automotive Service Excellence - Test Specifications for Manual Transmission & Rear Axle
32. National Institute for Automotive Service Excellence- Test Specifications for Front End
33. National Institute for Automotive Service Excellence - Test Specifications for Brakes
34. National Institute for Automotive Service Excellence - Test Specifications for Electrical Systems
35. National Institute for Automotive Service Excellence- Test Specifications for Heating & Air Conditioning
36. National Institute for Automotive Service Excellence - Test Specifications for Engine Tune-Up
37. Automobile Mechanic Task List - SACS/COEI

MATERIALS RECEIVED RELATING TO POTENTIAL-AMTEP-PROGRAM STANDARDS

1. American National Standard for Training of Automotive Mechanics for Passenger Cars & Light Trucks (ANSI D18.1-1972)
2. American National Standard for Training of Automotive Mechanic for Buses, Heavy Trucks, & Truck Trailers (ANSI D18.2-1972)
3. Educational Programs Procedural Recommendations - Georgia
4. AVA Guidelines and Procedures for the Development of Program Standards - Dr. Phares S. Nye
5. Automobile Mechanics Program Evaluation - Texas
6. Timetable & Procedures for Annual Evaluation of Degree and Diploma Programs - South Carolina
7. Employment Needs Evaluation - South Carolina
8. Program Evaluation Model - South Carolina
9. Industrial Mechanics Assessment & Palnning Manual - Oregon
10. Guidelines for Community College Evaluation of Vocational Programs - Oregon
11. A Guide for Evaluation of Postsecondary Occupational Preparation Programs - Nebraska
12. Revised Instruments and Procedures for the Evaluation of Vocational/Technical Education - Volume I - Maine
13. Revised Instruments and Procedures for the Evaluation of Vocational/Technical Education- Volume II - Maine
14. Program Standards for Vocational Education - Kentucky
15. Procedures for Program Self-Study and Validation - Kentucky
16. Industry Planning Council/Motor Vehicle Manufacturers Association/American Vocational Assocation Feasibility Survey for Automotive Program Certification
17. Evaluation Summary of an Industrial Education Class - Florida
18. Vocational Education Instructional Program Review (Occupational Proficiency Programs) - Florida
19. Vocational Education Instructional Program Review (Pre-Vocational & Pre-Technical Programs) - Florida
20. Vocational Education Instructional Program Review Occupational Proficiency Program (Program Self-Study Form) - Fla
21. Vocational Education Instructional Program Review (Community College) Occupational Proficiency Programs (Program Self-Study Form) - Florida

22. MD/CETA Projects - Mississippi

23. Manpower Monitoring Check List - Mississippi

24. Program Evaluation - V.T.A.E. Career Programs - Wisconsin

25. Self-Evaluation of Vocational Education Programs - Virginia

26. Policies and Standards of the Delegate Assembly of the Commission on Occupational Education Institutions - SACS/COEI-Ga

27. Procedures Handbook for Visiting Team Members - SACS/COEI - Ga

28. Action Handbook for Automotive Service Instruction - MVMA - Michigan

29. Instruments and Procedures for the Evaluation of Vocational/Technical Education Institutions and Programs - AVA - Washington, D. C.

30. Career Development Standards for Vocational Automotive Service Instruction - MVMA - Detroit, Michigan

31. Community College Guide for Associate Degree Programs in Auto and Truck Service/Management - AMA/ICP - Michigan

32. Self-Study for Review of Secondary and Post Secondary Vocational Education Programs (Quality of Instructional Offerings) Kentucky

POTENTIAL VOLUNTARY ACCREDITATION PILOT SITES

Glendale Community College
6000 West Olive Ave
Glendale, Ariz 85302

Central Arizona College
Collidge, Ariz 85228

Norwich Regional Vo-Tech School
590 New London Turnpike
Norwich, Conn 06360

H. C. Wilcox Regional V-Tech School
Oregon Rd
Meniden, Conn 06450

Public Schools of the District of Columbia
Office of Educational Programs & Services
415 12th St., N.W.
Washington, D. C. 20004

Lewis M. Lively Area Vo-Tech Center
500 Appleyard Dr.
Tallahassee, Fla 32304

John E. Ford Career Education Center
1057 West 1st Street
Jacksonville, Fla 32209

Sarasota County Vo-Tech Center
4748 Beneva Rd
Sarasota, Fla 33581

South Florida Junior College
600 W. College Dr
Avon Park, Fla 33825

George Stone Vocational-Technical Center
Rt. 10, Box 530
Pensacola, Fla 32506

South Dade Skill Center
N. Krome Ave
Homestead, Fla 33030

Pensacola Junior College
100 College Blvd
Pensacola, Fla 32504

St. Petersburg Vo-Tech Institute
901 - 34th St., South
St. Petersburg, Fla 33711

Collier County Vo-Tech Center
3702 Estey Ave
Naples, Fla 33940

Mid Florida Technical Institute
2900 West Oak Ridge Rd
Riviera Beach, Fla 33404

Pinellas Vo-Tech Institute
6100 154th Avenue, North
Clearwater, Fla 35530

Withlacoochee Area Vo-Tech Center
1607 W. Main St.
Inverness, Fla 32650

Okaloosa County Vo-Tech Center
1976 Lewis Turner Blvd
Ft. Walton Beach, Fla 32548

South Technical Education Center
1300 S. W. 30th Avenue
Boynton Beach, Fla 33435

Taylor County Area Vo-Tech Center
P. O. Box 780
Perry, Fla 32347

Brevard Community College
1519 Clearlake Rd.
Cocoa, Fla 32922

Daytona Beach Community College
P. O. Box 1111
Daytona Beach, Fla 32015

Indian River Community College
Virginia Avenue
Ft. Pierce, Fla 33450

Pickens Area Vo-Tech School
Burnt Mountain Rd
Jasper, Ga 30143

DeKalb Community College
495 North Indian Creek Drive
Clarkston, Ga 30021

Lanier Area Vo-Tech School
P. O. Box 58
Oakwood, Ga 30566

Columbus Area Vo-Tech School
928 - 45th Street
Columbus, Ga 31904

Swainsboro Area Vo-Tech School
201 Kite Road
Swainsboro, Ga 30401

Bainbridge Junior College
Bainbridge, Ga 31717

Walker County Technical School
Rock Springs, Ga 30739

Marietta Cobb Vo-Tech School
980 South Cobb Drive
Marietta, Ga 30060

Valdosta Area Vo-Tech School
Rt. 1, Box 83
Valdosta, Ga 31601

Griffin Spalding County Area Vo-Tech School
P. O. Box 131
Griffin, Ga 30223

Parkland College
2400 W. Bradley Avenue
Champaign, Ill 61820

Indian Hills Community College
Ottumwa Industrial Airport
9th and College
Ottumwa, Iowa 52501

Iowa Central Community College
330 Avenue M
Ft. Dodge, Kowa 50501

Hawkeye Institute of Technology
1501 E. Orange Road--Box 8015
Waterloo, Iowa 50704

Scott Community College
Belmont Road
Bettendorf, Iowa 52722

Western Iowa Technical Community College
4647 Stone Avenue
Sioux City, Iowa 51102

Fivco Vocational Education Region
Rt. 6, Box 434, Winslow Rd
Ashland, Ky 41101

Vocational Education Region 15 (Bluegrass)
100 Vo-Tech Road, Rt. 8
Lexington, Ky 40511

Vocational Education Region 4 (Barren River)
Western Kentucky University
College of Education Bldg., Rm 139
Bowling Green, Ky 42101

Vocational Education Region 12 (Kentucky River)
101 Vo-Tech Drive
Hazard, Ky 41701

Vocational Education Region 11 (Big Sandy)
313 Third St
Paintsville, Ky 41240

Southern Maine Vocational Technical Institute
Fort Road
South Portland, Maine 04106

Maine Vocational--Region 8
1 Main Street
Rockland, Maine 04841

Prince George's Community College
Largo, Md 20870

Allegany Community College
Cumberland, Md 21502

Mount Wachusett Community College
Gardner, Mass 01440

Wadena Area Vo-Tech Institute
Wadena, Minn 56482

Rochester Area Vo-Tech Institute
Rochester, Minn 55901

Utica Junior College
Utica, Miss 39175

Copiah Lincoln Junior College
P. O. Box 457
Wesson, Miss 39191

Hinds Junior College
Vocational Technical Division
Jackson Branch
3925 Sunset Drive
Jackson, Miss 39213

East Mississippi Junior College--Vo-Tech Center
Scooba, Miss 39358

Pearl River Junior College
Hancock County Vo-Tech Center
Rt. 3, Box 986
Bay St. Louis, Miss 39520

Pearl River Junior College--Lamar County
Purvis, Miss 39475

Mississippi Gulf Coast Junior College
Perkinston, Miss 39573

Jones County Junior College
Ellisville, Miss 39437

East Mississippi Junior College
P. O. Box 709
Columbus, Miss 39701

Northwest Mississippi Junior College
Senatobia, Miss 38668

Mississippi Gulf Coast Junior College
Jackson County Campus
Gautier, Miss 39553

Hinds Junior College
Raymond, Miss 39154

East Central Junior College
P. O. Box 529
Union, Mo 63084

St. Louis Community College at Forest Park
5600 Oakland Ave
St. Louis, Mo 63110

Waynesville Area Vocational School
Waynesville, Mo 65583

Metropolitan Technical Community College
P. O. Box 37210
Omaha, Nebraska 68137

Albuquerque Technical-Vocational Institute
525 Buena Vista SE
Albuquerque, New Mexico 87106

Warwick Vocational Technical Facility
Toll Gate Complex
575 Centerville Road
Warick, Rhode Island 02886

Piedmont Technical College
Drawer 1467
Greenwood, S. C. 29646

Sumter Area Technical College
506 North Guignard Dr
Sumter, S. C. 29150

Beaufort Technical Education Center
100 S. Ribaut Rd
Beaufort, S. C. 29902

Williamsburg Technical College
601 Lane Rd
Kingstree, S. C. 29556

Spartanburg Technical College
Drawer 4386
Spartanburg, S. C. 29303

York Technical College
U.S. Highway By-Pass 21-A
Rock Hill, S. C. 29730

Orangeburg Calhoun College
P. O. Drawer 1767
Orangeburg, S. C. 29115

Chesterfield-Marlboro Technical College
Drawer 928
Cheraw, S. C. 29520

Southern Utah State College
Cedar City, Utah 84720

Utah Technical College
4600 South Redwood Road
Salt Lake City, Utah 84107

Alvin Community College
3110 Mustang Rd
Alvin, Tx 77511

Angelina College
P. O. Box 1768
Lufkin, Tx 75901

Bee County College
Rt. 1
Beeville, Tx 78102

Brookhaven College
3939 Valley View Lane
Farmers Branch, Tx 75234

Cedar Valley College
3030 N. Dallas Avenue
Lancaster, Tx 75134

Clardendon College
P. O. Box 968
Clarendon, Tx 79226

Cook County College
P. O. Box 815
Gainesville, Tx 76240

Del Mar College
Corpus Christi, Tx 78404

Hill Junior College
P. O. Box 619
Hillsboro, Tx 76645

Houston Community College System
Occupational & Technical Education
4310 Dunlavy
Houston, Texas 77006

Henderson County Junior College
Athens, Tx 75751

Kilgore College
1100 Broadway
Kilgore, Tx 75662

San Jacinto College
P. O. Box 102
Pasadena, Tx 77505

South Plains College
Levelland, Tx 79336

Temple Junior College
2600 South First St
Temple, Tx 76501

Texarkana Community College
2500 North Robison Rd
Texarkana, Tx 75501

Texas State Technical Institute
Rio Grand Campus--P. O. Box 2628
Harlingen, Tx 78550

Western Texas College
Snyder, Tx 79549

Wharton County Junior College
911 Boling Highway
Wharton, Tx 77488

Weatherford College
308 East Park St
Weatherford, Tx 76086

Blue Ridge Community College
P. O. Box 80
Weyers Cave, Va 24486

Central Virginia Community College
P. O. Box 4098, Fort Hill Station
Lynchburg, Va 24502

Eastern Shore Community College
P. O. Box C
Melfa, Va 23410

John Tyler Community College
U.S. 1-301
Chester, Va 23831

Lord Fairfax Community College
P. O. Box 47
Middletown, Va 22645

Northern Virginia Community College
8333 Little River Turnpike
Annandale, Va 22003

Piedmont Virginia Community College
Rt 6, Box 1A
Charlottesville, Va 22901

Thomas Nelson Community College
99 Thomas Nelson Drive--P. O. Box 9407
Hampton, Va 23670

Tidewater Community College
State Route 135
Portsmouth, Va 23703

Virginia Western Community College
P. O. Box 4195
Roanoke, Va 24015

Big Bend College
24th and Andrews
Moses, Lake Washington 98837

Columbia Basin College
2600 North Chase
Pasco, Washington 99301

Grays Harbor College
Aberdeen, Washington 98520

Olympia Technical Community College
2011 Mottman Rd
Olympia, Washington 98502

Wenatchee Valley College
1300 Fifth St
Wenatchee, Washington 98801

James Rumsey Vo-Tech Center
Rt. 6, Box 268
Martinsburg, West Va 25401

Garnet Adult Center
422 Dickinson Street
Charleston, West Va 25301

Gateway Technical Institute
3520 30th Ave
Kenosha, Wisconsin 53142

Mid-State Technical Institute
500 32nd St., North
Wisconsin Rapids, Wisconsin 54494

Southwest Wisconsin Vocational, Technical
and Adult Education District
Bronson Blvd
Fennimore, Wisconsin 53809

Vocational, Technical & Adult Education--District 1
620 West Clairemont Ave
Eau Claire, Wisconsin 54701

Western Wisconsin Vocational, Technical and Adult
Education
Sixth and Vine Streets
LaCrosse, Wisconsin 54601

Wisconsin Indianhead Technical Institute
2100 Beaser Avenue
Ashland, WI 54806

APPENDIX M

PILOT TEST SITE FEEDBACK FORM

FEBRUARY 26, 1980

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT

AMTEP-

PILOT TEST SITE FEEDBACK FORM

Thank you very much for participating as an AMTEP pilot test site; your assistance in the project has been invaluable!

To assist us in making the standards, self-study material, evaluative materials, and team visit procedures as efficient and effective as possible, we would like you to share your thoughts on the above items with us.

I'm looking forward to your feedback, and will continue to share project information and products with you in the future.

SCHOOL NAME ______________________________

ADDRESS ______________________________

____

DATE ____________________

1. What changes do you feel AMTEP should make in each standard area? (Additions, combinations, modifications, or deletions.) Please be specific and refer to substandards if applicable.

I. PURPOSE:

II. ADMINISTRATION:

III. LEARNING RESOURCES:

IV. FINANCES:

V. STUDENT SERVICES:

VI. INSTRUCTION:

VII. EQUIPMENT:

VIII. FACILITIES:

IX. FACULTY:

X. COOPERATIVE AGREEMENTS:

2. What overall observations do you have regarding the standards?

3. What evaluative material changes need to be made in order to most effectively evaluate the program? (Please be specific.)

I. PURPOSE:

II. ADMINISTRATION:

III. LEARNING RESOURCES:

IV. FINANCES:

V. STUDENT SERVICES:

VI. INSTRUCTION:

VII. EQUIPMENT:

VIII. FACILITIES:

IX. FACULTY:

X. COOPERATIVE AGREEMENTS:

4. What information would have helped you in your self-study activities? Was instruction clear and complete?

5. What changes need to be made to improve the site visit procedure in the following areas?

(a) Pre-visit information. (Too much, too little, not enough time, etc.)

(b) Site visit procedures:

(c) Visiting team report:

THANKS!

Please return to: Charles Losh, AMTEP Director
Southern Association of Colleges and Schools
795 Peachtree Street N.E.
Atlanta, Georgia 30308

APPENDIX N

EVALUATION TEAM MEMBER FEEDBACK FORM

2/26/80

AMTEP TEAM MEMBER FEEDBACK

This is the last thing we will ask you to do, after what has been a very busy week!

For us to make the standards, evaluative materials and procedures as efficient and effective as possible we need your input. Please take time this week-end to write down your thoughts about the materials and procedures in each of the following areas, and send them to me as soon as possible.

THANKS!!!

P.S. Please enclose this with your expense voucher so that it can all be processed at one time.

1. What changes do you feel we should make in each standard area? (Additions, combinations, modifications, or deletions.) Please be specific and refer to substandards if applicable. (If necessary use a separate sheet)

I. PURPOSE:

II. ADMINISTRATION:

III. LEARNING RESOURCES:

IV. FINANCES:

V. STUDENT SERVICES:

VI. INSTRUCTION:

VII. EQUIPMENT:

VIII. FACILITIES:

IX. FACULTY:

X. COOPERATIVE AGREEMENTS:

2. What overall observations do you have regarding the standards?

3. What evaluative material changes need to be made in order to most effectively evaluate the program? (Please be specific.)

I. PURPOSE:

II. ADMINISTRATION:

III. LEARNING RESOURCES:

IV. FINANCES:

V. STUDENT SERVICES:

VI. INSTRUCTION:

VII. EQUIPMENT:

VIII. FACILITIES:

IX. FACULTY:

X. COOPERATIVE AGREEMENTS:

4. What changes need to be made to improve the team visit procedures in the following areas:

(a) Pre-visit information. (Too much, too little, not enough time, etc.)

(b) Orientation/training at site but prior to team visit:

1. Materials:

2. Procedures:

3. Other:

(c) Site visit procedures:

THANKS!

Please send to: Charles Losh, AMTEP Director
Southern Association of Colleges and Schools
795 Peachtree Street N.E.
Atlanta, Georgia 30303

APPENDIX O

FIELD TEST FEEDBACK

DRAFT 1 - FEEDBACK

STANDARDS
and
EVALUATIVE MATERIAL

What evaluative material changes need to be made in order to most effectively evaluate the program? (Please be specific.)

STANDARD 1 - PURPOSE

-I think item E of 1.3 should be eliminated. It just is not practical for a college to include a task list in its catalog for every program. The finalized catalog would weigh a ton.

-1.1 80% may be a high expectancy when considering that some don't seek employment in auto service.

-1.1 As we discussed earlier, a 80-90% level is probably valid for selective admission programs. But, I think this figure would be way high for open door programs.

-1.2 As a public supported training institution, it is not our function to become directly involved in consumer concerns. We try to impress upon our students the need to be conscientious and honest in their work.

-I'm not sure what you mean by qualifications of instructors. If a general statement is used, it could be of value. Our turnover in instructors is too great to be specific about each one.

-1.5 Probably need some help in the field as to what a valid survey of community needs is and how to implement. If the survey is not properly handled it could cause more disruption than provide help to program development.

-In addition to YES and NO - would there be any value in a subjective response from the members of the site visit team as to their perception of their objectives?

STANDARD 2 - ADMINISTRATION

-2.4 Should be grouped with other advisory parts.

-2.4 Delete questions about consumer agencies and service consumers.

-I would agree that we don't make use of our advisory committee one hundred percent, but our instructors (with two exceptions) are industry themselves.

-2.6 In theory good, practice unmanageable.

-2.6 ADD as second sentence: Each student must be provided a copy of this training plan (see 3.9).

-2.6 Should be grouped with instruction

-2.7 Should be grouped with instruction

-Possibly include evaluation of instructors by administration.

-Additional questions: Is it constructive? Does it happen?

-I think you need to re-evaluate the need for listing these items in this section when they are covered elsewhere.

STANDARD 3- INSTRUCTION

-Validating task lists and inventories will vary by geographics, and I'm not sure that these lists should be standardized. Student progress charts do not exist as a primary display but are accomplished through mandatory job sheet utilization.

-3.2 Should be student load

-3.2 I have difficulty interpretating this criteria statement under this heading. The confusion is further aggravated when looking at 7.1.

-3.2 Teaching load title misleading

-Work station should be included in Facilities

-Under 3.6, how is this documented?

-3.8 Possibly expand this criterion to involve instructor's daily action, dress, personal appearance and work habits. An instructor shold look and act professional, not like a grease monkey.

-3.8 I think this is an excellent standard for program operation but should be expanded. Specifically as to whether the instructors in a program lives up to the desired level in their daily actions, dress, personal appearance and work habits. This is a big order, but one of vital importance because of the influence it has on the student. Maybe this issue should be raised under faculty heading?

-3.9 Might have A, B, C, etc., for separate ansers.

-3.14 Location of this subpart is incorrect. It is a part of daily instruction.

-3.15 Is student and advisory committee input properly balanced with overall plan to cover all automotive systems. I have a concern that local market trends and collaboration between service facilities can misguide what a program should be doing. I also believe that a training program should be helping to set the standards of performance for industry not just providing manpower to meet the need of perhaps substandard operations.

-3.15 Add an evaluative criteria statement to encompass the suggestion I posed in the instructional program standards area. A statement would need to test local service procedures and philosophy with what is done nationally and does the training program help establish these service procedure and the philosopy and strive to meet this level of operation.

-3.16 ADD underlined portion to second sentence: ...by the governing body or administrative personnel of the training program.

-3.16 Sentence misleading - Does live work jobs directly relate to lecture or unit being taught?

-Does student have training and experience before performing live work?

-Numbers in evaluative criteria (3.7, 3.8, 3.9) do not correlate with standards.

STANDARD 4 - FACULTY

-4.1 Perhaps some consideration should be given to the currency of an instructor's work experience.

-4.3 Rework - Instructors should hold current Red Cross certification in First Aid.

-Expand 4.3 Is there incentive to encourage instructors to obtain further technical updating or training in factory schools, professional work shops, et.

-May change 4.3 to read: (b) Do instructors hold NIASE certificate, (c) Do instructors return to industry.

-4.4 ADD: ...must hold certificates (credentials) required by....

-4.7 ADD after 4.6: Utilization of "part-time" or a "adjunct" instructors should empasize technical competence (4.1), instructional competence (4.2), technical updating (4.3), and certification (4.4). An orientation session should be held on a regular basis. All instructors teaching the same course should use the same performance based instructional material.

STANDARD 5 - LEARNING RESOURCES

-5.1 ADD as second sentence: Specific selection of vehicle service manuals should reflect domestic and foreign manufacturers.

-Are these materials easily available?

-5.5 Could be changed from 3-5 years old since books are not printed often.

-Funding must be provided to meet the approved program and performance objectives. Would place under Standard 2, Administration.

STANDARD 6- EQUIPMENT

6.1 Tools and equipment used should go beyond local industrial standards if the local standards do not meet national standards. Also, inordinate amounts of money should not be spent on lavish types of equipment that is used only for experimental and speciality work which is not normally performed in the service industry.

-Good suggestion on equipment replacement, but since proposition 13 in California our funding projections are impossible to deal with at this time.

-Possible question - Are there sufficient special tools for supplementing student basic tools?

STANDARD 7 - FACILITIES

-7.1 ADD as second sentence: Space must be allocated for both "bench" and "live" work according to class enrollment.

-7.2 Add Safety Committee

-7.2 Change to electrical disconnect or other means to shut down power.

-7.7 COMMENT: Some general guidelines regarding a recommended range of square footage (meters) should be recognized in this subpart. The differences between "bench" and "stall" space should be recognized.

-7.12 Lighting in the shop and classroom areas shold be adequate to support the activities that are carried out in these areas so as not to cause undue eye strain or create any safety hazards.

-We do have a complete first aid kit in this area that is maintained by the school nurse.

STANDARD 8 - FINANCES

-8.1 I feel this statement should reflect not only that there is in fact a budget and the method in which it was developed, but that it is also adequate and appropriately used to support the program.

-8.2 ADD as second sentence: Instructional staff and students should not be directly responsible for collecting live work repair monies.

-Money is available for reference material and consumble supplies for this program. However, our accounting system dictates these categories for budgeting and expenditures.

STANDARD 9 - STUDENT SERVICES

-9.5 A statement evaluating advisory and counseling services as suggested in program standards.

-9.5 Special Developmental (Counseling) Services. A program should include an ongoing advisory program with faculty and counselors interacting with students to identify special needs in the areas of learning difficulties, attitudes and various other forces that severely distract from students learning activities.

-Group follow-ups together

-A systematic plan for identifying student learning skills should be used. Provision of a program to improve deficiences should be available for identified students. Students with career goals and adequate learning skills should be admitted or registered prior to other persons (see 13.1)

STANDARD 10 - EVALUATION

-10.3 CHANGE to read: The curriculum must be reviewed annually and updated as necesary, including...

-Group advisory units together

STANDARD 11 - COORDINATION WITH OTHER UNITS

No comments.

STANDARD 12 - COOPERATIVE AND APPRENTICESHIP TRAINING

-12.1 Expand this standard to include the following: The degree and performance standards of a co-op program must be of the same quality and level as the conventional in-house institutional training program.

-I think you should visit a training station or two if time permits.

STANDARD 13 - PROGRAM ADMISSIONS

13.1 Sentence is confusing. Needs to say are there prerequisites? How are they determined? Are provisions made for those that are deficient?

-13.2 Legislated Requirements - I am not sure about the position of this standard under admissions unless it is to refer to legislation concerning admission only. If this is the case perhaps it should be clarified.

-13.3 And/or instructors

-The Education Code in this state does not allow prerequisites unless they are academic (i.e. Automotive I would be the prerequisite for Automotive II.)

-Remediation is accomodated for Automotive Technology students, as well as all others in vocational programs, in the Citrus College Learning Assistance Center utilizing Vocational Education Act Disadvantaged funds.

What information would have helped you in your self-study activities?

-No problem here; very useful and practical for our purposes.

-The self-study was very clear and easy to follow.

-Information about first aid.

-Information was quite complete.

-More information (by telephone) from person in charge of activities.

-More information to relieve tension concerning activities.

-Information is usually not obtainable relative to 90 days (employment of program completion. Why 90 days?

-Instructor Liability (a) state laws governing institution, (b) awareness of potential, (c) release form - protecting school/instructor - used.

-Instructions very clear.

-A standard/guideline developed for teaching load/contact hour ratio. Example: Teaching time/classroom 24 hrs/40 preparation time: 1 Hr. to 4.

-Clearer definition of specialization/upgrading.

What changes need to be made to improve the site visit procedure in the following areas?

Pre-visit information. (Too much, too little, not enough time, etc.)

-Did not receive evaluation guide prior to visit.

-Would like a little more information on who the evaluators are before the visit.

-Was O.K., but would have been much better had I understood what was actually going to happen - (You do this all the time but its new to me).

-Was about right.

-If by pre-visit information you mean the information you mailed to me in advance of visit I would like to have had the standards to review, I think I could have been more effective the first visit. Not enough time talking to particular person. Should be done on a 1 to 1 basis in private.

-If key administrators are not available then perhaps the visit should be postponed. One of the greatest benefits I see is the report time - our institution suffered from the lack of this.

-Not enough time; instructors should be advised to complete self-study before team arrives.

Orientation/training at site but prior to team visit:

1. Materials

-This should be put into an information booklet form.

-Should be available to team prior to their visit to particular area.

-All materials should be on hand for team.

-Good

2. Procedures

-Each team member to be selected for particular areas on day before visit.

-Could use more in-service training on the use of the instrument, the depth to which one should look into college materials and how to carry out site visit.

3. Other

-You might give more "does and don'ts" as a team member. I realize it is difficult because your do not know everyone's background. One observation during our visit - instruct team not to respond with "back at my school..." after questioning a person on site.

Site Visit Procedure

-Each team member should review all recommendations of the other members before presenting them to the school.

-I was impressed in this area, because the procedure you used seemed to me to cut through the usual "red tape" and get to business. I very much appreciated and enjoyed the opportunity to help in your validation process, plus the fact that you have helped this department assess its problems. The only regret that I have was not being able to sit down and discuss with the two experts their program operations, etc...

-Pre-visit procedures: It seemed that the inquiries were made in a somewhat random fashion. With the quantity of information to be obtained, it seems that many items could easily be overlooked.

-Would have preferred evaluators to have more time to talk with employees.

-Well carried out - very pleasant - nothing like I expected.

-Written outline would help because we could improve the team efficiency with input in the visit schedule detail, i.e. order and time to visit necessary personnel could be made to fit their schedules.

-Excellent verbal report. Lots of good ideas.

-Good - Be sure everyone involved attends meeting - communication was poor.

-Meet evenings of visit for orientation.

-Evaluate materials available early in morning.

-Visit all lab areas first.

-Good for everyone concerned to have one of the fill out sheets; gives them a chance to think out responses.

-Perhaps an oral evaluation of visit and critique as a site group prior to filling out the form. Also, I think maybe this form could be a team effort where a sharing of ideas could come together. Also, "nit picking" could be side tracked; it might speed up the evaluation process.

-I think I would have been more effective had I not switched from instructor to support section but instead done the same section at both sites. Also, I think a number scale instead of YES/NO would be valuable.

-Too much time evaluating standards, too much talking.

-Should go through all standards with negative response.

-Meet with faculty first, then administration.

Post site visit activities

-Perhaps a letter should be sent to the advisory committee members and to employers of students to obtain additional informed opinions about effectiveness of a given program. Such questionnaire would have to be carefully worded and evaluated however.

GENERAL COMMENTS

-We have no recommended changes for any of the thirteen standards. As a result of taking trainees from another agency which handles screening (we have no control here), we have gotten many who in no way measure up to the prerequisite skills we would like to find in new students. Because of this experience, we think (Student Services Standard) trainees should enter training with a high school diploma on a GED.

-If possible, talk with industry and program leavers, then compare findings disclosed in the regular follow-up studies. Again, present students, former students, faculty and advisory council members should be contacted if possible to gain information relative to the administrations attitude toward to program.

-It is my belief that Items III through X are all tied to instruction. It is my belief and others, that given the best instructional materials and exceptional physical facilities, a program conducted by an incompetent instructor will, at best, be marginal. If this is true, then the evaluation of faculty members is much more important than evaluating facilities. The task lists that are used and in this case, forthcoming, will help, however, I believe that a million dollars worth of equipment, and detailed task lists, etc. will not guarantee a successful program, that is carried out by incompetent instructor or instructors.

-Standards should be combined so that only one team member deals with specific areas.

-In general, we felt the standards were excellent, covering all areas in depth.

-Generally, I feel that the standards we worked with were very comprehensive and exceptionally well written. I feel that each specific standard is a minimum must for an effective training program.

-The evaluational criteria used are well enough detailed, but I would like to see more of a structured way of documenting an institution's manner in addressing the standards.

-To improve the team visits and make them as effective as possible I offer the following remarks and suggestions:

a. It would be most helpful if the institution being visited would have certain materials located and on display for the visiting team.

b. A schedule of interviews be set up with the site administration, staff, and students. This could be accomplished by letter prior to the actual visit.

c. Be supplied with a list of the area employees so that a team member could interview them on student placement and gather other information on program meeting industry needs. This visit could also involve interviews with the program graduates placed on the job.

d. The materials that could be made available to the visitation team are:

.instructors names, credentials, and schedules

.student enrollments in class (numbers)

.program advisory committee names and minutes of previous advisory committee meetings

.a list of previous years programs graduates and completors and where they are employed

.results of local surveys to determine needs

.copy of annual program budget

.copies of program on class final student assessment tests.

DRAFT II FEEDBACK

STANDARDS
AND
EVALUATIVE MATERIALS

DRAFT II

STANDARD 1 - PURPOSE

-1.1 Employment Potential: Inappropriate. Place in Student Services Standard 6.

-1.2 Relevance to community needs: Place under Evaluation, Standard 12.

-1.2 Does this statement reflect what is meant in program standards?

-1.4 Program Objectives: Inappropriate, place under Instruction.

-1.5 Program Enrollment: Statement belongs under Standard 3, Admissions.

-1.6 Program Review: Inappropriate, place under Evaluation, Standard 12.

STANDARD 2 - ADMINISTRATION

-2.2 Administrative Support: (Covered in standard areas indicated.) Redundant sub-standards 11.5, 10.1, and 9.3

-2.3 Written Policies: Good, but redundant.

-2.4 Advisory Committee: Advisory Committee doesn't belong here, it is not administrative, it is an advisory and recommending body. Place under Instruction, Standard 8.

-2.4 "Is a local consumer agency represented"--this statement needs clarifications or examples to better define purpose.

-2.5 Evaluation System: Redundant sub-standards 8.4, 8.7, 8.16, and 10.12.

-2.6 Student Training Plan: Place under Instruction, Standard 8.

-2.7 Community Relations: Good. I would placed under Standard 5, Finances.

STANDARD 3 - PROGRAM ADMISSION

-Redundant - Assimilate within Standard 6, Student Services.

-I agree that this standard should be revised or included with Standard VI.

STANDARD 4 - LEARNING RESOURCES

-Belongs under Standard 3, Instruction, not a separate entity.

-4.1 Service Manuals: Refer to above statement.

-4.2 Multi-Media: Refer to above statement.

-4.3 Instructional Development Services: Refer to above statement.

-4.4 Periodicals: Refer to above statement.

-4.5 Reference text: Refer to above statement.

-4.5 Monies dictate longer textbook usage, still impractical from funding.

STANDARD 5 - FINANCES

-5.1 Nice but not workable (delete)

-5.2 Wonderful (but it doesn't work) (delete)

STANDARD 6 - STUDENT SERVICES

-Good question, but combine with Standard 3 and 1, Admissions.

-Prior to program admission a student must be interviewed by the counselor and may be interviewed by the department head and/or instructor(s).

-6.5 Testing - Do not limit testing to institutional tests, instead, ask "are objective data used in student selection/advertisment?"

-.6.7 Interviews - Admission takes place during the summer in many colleges. Instructors not available.

STANDARD 7 - COORDINATION WITH OTHER UNITS

-Would place this section under articulation, depends upon competency skills attainment.

STANDARD 8 - INSTRUCTION

-8.1 Program Plan: Place under Faculty, Standard 11.

-8.2 Preparation Time: Place under Faculty Standard 11.

-8.3 Numbers here would be great instead of general statements.

-8.4 Curriculum: Curriculum is a standard by itself.

-8.4 It would be useful to have the eight NIASE areas listed to be checked off.

-8.5 Systematic Instruction:

-8.6 Redundant substandard 8.4 and 8.7.

-8.9 Stress this more strongly

-8.11 Mention grooming, etc., and personal tool care, etc.

-8.14 Testing: Good, but redundant 8.4 and 8.7

-8.15 Good, but redundant substandard 7.3

-8.16 Place under Faculty, Standard 11

-More elaboration may be needed in evaluative criteria for single sentences with YES/NO answers. You may want to break VIII into parts A and B; A on daily instruction, B on curriculum live work, etc.

-Group all safety related instruction into one general sub part or sequential sub parts.

-Instruction must be systematic and reflect program objectives. A task list of specific performance objectives with criterion referenced measures must be used. - Redundant.

STANDARD 9 - EQUIPMENT

-Add something concerning an inventory listing of equipment on hand in the program.

-Good question, but I would combine Standards 8 and 10 with 9 or vice versa.

-9.1 Redundant

-9.3 The last part should be considered from both angles; as good as but not better than. Many schools buy equipment which 90% of the shops in their area can't possibly justify from a cost standpoint.

-9.4 You might want to redefine consumable supplies. Do you mean consumable supplies - gasket sealers, Cotter pins, grease, oil dry, etc.?

-Add 9.4 floor dry, parts cleaner, shop towel, personal wash areas, etc.

-9.10 Do instructors know how to properly use all equipment that has been purchased for instruction?

-9.11 Is all equipment that has been purchased for instructional purposes in regular use by students?

STANDARD 10 - FACILITIES

-Square footage per student in the lab should be recognized more specifically in the standard rather than the evaluator's opinion.

-The physical facilities must be adequate to permit achievement of the program and performance objectives. - Combine with Standard 8 and 9.

-You can't treat college students like they are in high school. A student safety committee is an insult to college students. I think this item should be eliminated when evaluating a college program. Assign this responsibility to the shop foreman.

STANDARD 11 FACULTY

-11.1 NOCTI is outdated at present.

-11.4 Certification: Redundant with 11.2 sub-standard.

-11.5 Innovative should be replaced with improved.

-11.6 Good in theory but how when you are paid $30.00 a day how do you manage to have an orientation? We have one sub in Sarasota County that is certified.

-11.6 This assumes that substitutes are used.

STANDARD 12 - EVALUATION

-Redundant in sub-standards 1.1, 6.3, 8.16, 9.3, and 10.13.

-Delete since incorporated in other standards and sub-parts.

STANDARD 13 - COOPERATIVE AND APPRENTICESHIP TRAINING

-I would place this under Instruction Curriculum, Standard 8.

-May want to recognize NADA programs.

What changes need to be made to improve the team visit procedures in the following areas?

Pre-visit information (Too much, too little, not enough time, etc.

-Should request items relevent to the visit be available in one place and cataloged according to sub part number.

Orientation/training at site but prior to team visit:

Materials

-No comments

Procedures

-I think the quality of the visit is dependent on the individuals involved but some emphasis or reminder should be made for them to use open worded questions in seeking information.

Other

-Commendations and recommendations could be made reflective to sentences within each respective standard; i.e., changing must to should or could in the team members' recommendations.

Site visit procedures

-No comments

Post site visit activities

-Revise feedback form to conform to current numbering system of standards.

OVERALL OBSERVATIONS

-As a part of the interview guide, I would find a school and personnel information sheet very helpful in getting to know the people and their relationship in the school structure. The following items are a few which I think would be helpful:

a. Name of school

b. Type of school - High School, Area Vocational Center, Postsecondary Vocational Center, Vocational Technical College, Community College.

c. Name and Title of Personnel:

President

Dean of Instruction

Director of Admissions

Director of Counseling

Program Director

Department Chairman

Instructors and Areas of Responsibility

-The standard numbering on the feedback form did not match the Program standards Draft II numbering.

-Project and instruments are well thought out.

-I truthfully have very little difficulty in accepting the program standards spelled out in Draft II, 1/4/80.

-Safety might be grouped as a separate item or unit.

-Standards are tremendous.

DRAFT III FEEDBACK

STANDARDS
AND
EVALUATIVE MATERIALS

5/19/81

DRAFT III

What evaluative material changes need to be made in order to most effectively evaluate the program.

STANDARD 1 - PURPOSE

-1.1 Should be divided by year - or for last 3-5 years.

-1.2 Mechanic training - yes, consumer complaints - no. Handled here in California by State Department (Bureau of Auto Repair)

-Place 1.3 before 1.1

-1.4 You state enrollment should be sufficient to keep costs realistic which is true but no where do you site any maximums for student/faculty ratios. I think there is a point where one more becomes too many. Do you agree or disagree?

-1.5 I suggest that input only be considered from students who were "program completors" and not "non-returning."

-I think the 90 days is less important than if program completors do in fact go to work in the career cluster and hold a job.

-Clearer meaning of what the statement of purpose should be.

-Some of the evaluative critria does not seem to fit the standard.

-Delete 1.3 f.g. not necessary for brochures. Not the type of information prospective students are necessarily interested in.

-None - Excellent as stated

STANDARD 2 - ADMINISTRATION

-2.3 Is budget consistent with budgets of similar programs within college?

-2.3 Should be under Facilities or Instruction. Magazines should be under Learning Resources and budget should be under Finances.

-2.3 Administrative support of capital outlay - recruitment on annual basis, adequate repair budget.

--2.4 I don't believe in written policies given out to students and others on liability matters. The more you talk about liability, the more problems you create.

-2.8 Public relations plan? Suggest asking if and to whom materials are sent.

-Need to clarify 2.6 "peer review." Sometimes don't know whether it means others in department or other school people.

-In many cases it may be difficult to modify certificates, because of policies. This could be deleted or changed to addendum.

-Should require 5 year plan for continued long range upgrading and revision of program.

-Advisory Committee work is also faculty role.

-Eliminate repeat information between this section and instruction.

-This covers a lot of territority. Perhaps be split into administrative policies.

STANDARD 3 - LEARNING RESOURCES

-3.1 Change seven (7) years to read ten (10) years.

-3.2 Is list of resources made available to students?

-3.4 Add: These materials must be located in the shop area. Sub-standard under service manuals would be manufacturers service bulletins. The place to begin enforcing the use of these materials is in the school.

-Change the word textbook to resources on item 3.5 (handout instead of textbook)

-What is meant by "Specialty Textbooks?" Those provided for reference or those required by instructors for specialized areas?

-Is tutorial assistance made available to students?

-ADD as second sentence: Specific selection of vehicle service manuals should reflect domestic and foreign manufacturers.

STANDARD 4 - FINANCES

-4.1 Does budget include items for (1) supplies, (2) equipment, (3) travel, etc.?

-ADD: Are requested budget items listed by faculty considered or arbitrarily cut?

-Should ADD: Is money collected for ancillary and shop fees ever "returned" to automotive students who paid those fees?

-Quite brief - Perhaps could get into more depth on means of support as well as process.

-Need accessibility of money to instructors, i.e. time delay, lots of signatures, paper work, red tape, etc.

STANDARD 5 - STUDENT SERVICES

-5.1 Does pre-testing mean before they enroll in the program or can it take place a week or so after school starts?

-5.1 Super idea, however, may not be practical, we may have problems here with that.

-Placement - 5.1: Some basic guidelines should be included i.e., reading, math, manipulative skill ability to use as a standard.

-5.2 A student must be interviewed by the counselor and should be - interviewed by the department head and/or instructor.

-5.2 Are students interviewed by a counselor, or department had who has knowledge of program requirements and goals? interviewed by the department head and/or instuctor.

-Very complete. Some problem with prerequisites.

-Suggest or require a minimum grade level of competence in reading and math.

-Considering open door policies by most colleges, some could be deleted, except 5.1 - First question, and [illegible].2, 5.2, 5.4, and 5.5.

STANDARD 6 - INSTRUCTION

-6.1 Make clear to the evaluatee if you are asking about courses rather than overall program.

-6.4 How about an example of a "local law."

-6.4 Does the instructor have, and follow, a carefully prepared course outline or course of instruction?

-6.4 Please define specialization vs. upgrading. Should have questions dealing with part-time faculty.

-6.7 Perhaps combine first two questions regarding safety standards. Wouldn't your answer to the first question preclude your answer to second?

-6.11 Some basic guidelines as to type of related instruction courses, i.e. human relations, technical writing, etc.

-6.12 No YES/NO answer.

-6.14 Suggest deleting the word "experience."

-6.14 Does not ask where live work comes from.

-6.6 and 6.12 could be combined.

-I agree with it all but I have seen programs that follow these steps to a tee. They have everything on paper, use task lists and performance testing etc., and in my opinion, run a poor program. Nothing beats good faculty backed up by a good administration.

-Question 6.3 is truly unrealistic according to most colleges.

-Many expect, no, demand, 15 or 20 to 1 minimum.

-AMTEP should eventually develop a course outline or course of instruction to be used for teaching in the eight specialty areas. The task list would be the basis for developing this course.

STANDARD 7 - EQUIPMENT

-7.1 Checklist of specific equipment, hazardous areas, etc. to be observed.

-7.4 Is adequate money allowed?

-7.6 Suggest four seperate questions to cover each item individually.

-7.7 We have had problems with open purchase orders, thus we no longer have such a system.

-You need more flexible guidelines here to recognize the problems of schools meeting the needs of career and hobby students relative to tool purchase.

STANDARD 8 - FACILITIES

-8.1 Training station is not an appropriate term.

-8.2 Once again, as in 7.1 above, a checklist would be useful.

-8.2 Add after all equipment - "must be inspected on a regular basis." Recommend checklist prepared by the American Vocational Association be used to check for both facilities and equipment condition.

-8.10 Definition of what constitutes a first aid station and what "up-to-date" supplies refer to.

-Use of non skid flooring near presses, grinders, etc.

-Do floors have adequate drainage?

STANDARD 9 - FACULTY

-9.1 Separate full-time and part-time faculty

-9.4 We agree whole heartedly

-9.5 Perhaps suggests sources for substitute list. (Advisory Committee members, acquaintances of instructors, etc.)

-Perhaps more specification is needed in determination of teacher competence.

-The certification questions did not adequately research our system. Our system is internal but the questions about state requirements only led the evaluator to conclude that we have a much less formal certification procedure than what I believe really exists.

-Possibly provision for release time to attend manufacturers schools - substandard to require "X" amount of personnel upgrading each year and document same.

STANDARD 10 - COOPERATIVE AGREEMENTS

-10.5 Suggest some guidelines for determining how original institution can "verify" mastery of the student.

-10.5 The word "articulated" has a variety of meanings, formal/informal?

-Not usually a postsecondary activity.

What changes need to be made to improve the team visit procedures in the following areas:

Pre-visit information (Too much, too little, not enough time, etc.)

-No problem. I like the attitude I think you have Charlie, is that a team will report what it finds; nothing more, nothing less. The instrument in its present form, as far as I am concerned, measures what I believe the intent of it is supposed to be.

-Explain in detail what materials must be available to visiting team and ask that a list of persons responsible for each area be provided each team member.

-Adequate time for material digestion. Good preliminary information.

-It was not clear at first what the goal of the effort was to be.

-It would be helpful to know which standards are to be handled by whom in order to give more "think" time to the standards.

-Emphasize again verbally that physical evidence is required - don't just take a "yes" answer on their "honor."

-Time format was O.K. at least for our team.

-More explicit instructions on what materials, etc., should be available. Possibly a rough schedule showing that pre-evaluation meetings should be limited to 1 - 1 1/2 hours.

-I felt confident as to what my responsibilities were. More background information about the school program and instructors.

-Not enough time. (Due to our mail service, both U.S. and campus)

-Emphasize the need for seeing "hard evidence" to back up statements given by those being interviewed.

-Explain to host reason for get together the night or morning preceding inspection.

Orientation/training at site but prior to team visit

Materials

-Good

-Instructors should assemble materials in advance, to a greater degree. These materials should include all tests, quizzes, and final exams. Also handouts that students receive - In essence, all of the available course materials.

-Perhaps give the team a copy of the self-evaluation. This could give some insight into their written report.

-Put in blank spaces for additional remarks beside Yes, No, But, etc.

Procedures

-Good

Other

-Should visit with at least two former students and two advisory committee members at the college when possible.

Site visit procedures

-It's possible to do three site visits.

-Seems pretty good.

-Very commendable.

-Would like to visit site first with instructors only - then visit with administrators separately to check information, then wander in shop when class is in session.

-Good

-Written outline would help because we could improve the team efficiency with input in the visit schedule detail, in order and time to visit necessary personnel could be made to fit their schedules.

-Preschedule visiting team report prior to visitation

OVERALL OBSERVATIONS

-Overall, I think the standards are excellent.

-The standards cover quite thoroughly the elements of a good program.

-I believe that the guidelines for evaluation provided an instrument that allowed me to objectively assess the areas that I was assigned.

-Presently, I feel the standards as written are an excellent starting point for program evaluation.

-Better than anything I have seen - congratulations!

-Very helpful in preparing for site visit.

-I like the instrument the way it is now, because it cuts through the verbage and gets "down to the guts" of any program. If the program is weak this instrument will find it, likewise, it indicates strength.

-Very comprehensive - obviously written and organized by people knowledgeable of the auto mechanics field.

-Rearrange the number of areas so that the one evaluating teachers would have 1-4 and the one evaluating administration would have 5-10.

-Very good - I found areas we can improve.

-The standards, for the most part, appear to be well within the scope of training areas, with some exceptions.

-They seem to cover all aspects relating to good instruction very well.

-Is it possible to use these standards with small schools? Do these schools have enough personnel to achieve these standards?

-The standards appear to be very good. We have made statements in prior section.

-Standards are very good

-They are clear, relevant, and usable

-I have no outstanding feedback comments with the exception of a couple of comments enclosed. In fact, I was very impressed with the comprehensive report that you and your people presented us.

-There were things that were brought out that I could never agree with but that's the poit of having various points of view. In many instances, you made us aware of shortcomings and areas that we have neglected. Hopefully, we will be able to work towards improvement in these areas and our thanks to your diligent crew for bringing them to our attention.

APPENDIX P

INSTRUCTOR/TEAM MEMBER QUESTIONNAIRE

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT

- AMTEP -

TEAM MEMBER - INSTRUCTOR QUESTIONNAIRE

NAME______________________________TITLE________________________

DATE______________________EMPLOYED BY_________________________

LOCATION____

1. Primary responsibilities; areas you instruct in:

2. Other responsibilities, administration, etc.

3. Detail your qualifications for these responsibilities: (experience, training, formal education, etc.)

4. If instructing, how and when did you receive your teacher training?

5. How do you keep up-to-date with requirements of the occupation(s) for which you prepare students?

6. In what ways do you improve your professional competence? (Show recent professional organization activities, work experience, formal education, in-servce training, self-study, etc. and time involved.)

7. How long were you an automobile mechanic?

8. What is the date and description of your most recent automobile mechanic experience?

9. Do you hold NIASE certification? If so, in which area(s)?

APPENDIX Q

PILOT TEST SITE AND EVALUATION TEAM MEMBER

PHASE II

PHASE III

LETTER TO TEAM MEMBER

LETTER TO PILOT TEST SITE

SCHOOL INFORMATION SHEET

PHASE II AMTEP SITE VISIT(S) AND TEAM MEMBERS

September 24 - 25, 1979

Bessemer State Technical College
P. O. Box 308
Bessemer, Alabama 35020

Dr. Charles Payne
President

September 27 - 28, 1979

Tarrant County Junior College
Northwest Campus
4801 Marine Creek Parkway
Fort Worth, Texas 76179

Dr. Michael Saenz
President

Team Members

Mr. Sid Barnes
New Hampshire Vocational-Technical College
505 Amherst Street
Nashua, New Hampshire 03060

Mr. Dick Radock
Westmoreland Community College
Central Campus
Youngwood, Pennsylvania 15697

October 15 - 16, 1979

Lower Columbia College
Longview, Washington 98632

Dr. David B. Story
President

October 18-19, 1979

Citrus College
18824 East Foothill Blvd.
Azusa, California 91702

Dr. Robert Haugh
President

Team Members

Mr. Cecil Brewer
Tarrant County Junior College
4801 Marine Creek Parkway
Fort Worth, Texas 76179

Mr. Tom Hinds, Director
Instructional Material Lab
Ohio State University
Columbus, Ohio 43210

PHASE II AMTEP SITE VISIT(S) AND TEAM MEMBERS

October 29 - 30, 1979

Westmoreland County Community College
Central Campus
Youngwood, Pennsylvania 15697

Dr.John Carmichael
President

November 1 - 2, 1979

New Hampshire Vocational-
Technical College
505 Amherst Street
Nashua, New Hampshire 03060

Dr. Robert Bloomfield
President

Team Members

Mr. Myron Appel
22822 Montaego Road
Laguna Niguel, California 92677

Mr. Billy Meyers
Mechanic Technology Department
Citrus College
18824 East Foothill Bovd
Azusa, California 91702

PHASE II AMTEP SITE VISIT(S) AND TEAM MEMBERS

February 10 - 12, 1980

Sarasota County Vocational-
Technical Center
4748 Beneva Road
Sarasota, Florid 33583

Mr. Peter F. Mathey

February 13 - 15, 1980

Columbus Area Vocational-
Technical School
928 45th Street
Columbus, Georgia 31904

Mr. W. G. Hartline
Director

Team Members

Mr. Sid Barnes
New Hampshire Vocational-Technical College
505 Amherst Street
Nashua, New Hampshire 03060

Dr. James Hanneman
Oakland Schools
2100 Pontiac Lake Road
Pontiac, Michigan 48054

February 24 - 26, 1980

Jefferson College
Hillsboro, Missouri 63050

Mr. Frank L. Hoskin
Instructor

February 27 - 29, 1980

Oklahoma City Skills Center
201 N.E. 48th
Oklahoma City, Oklahoma 73105

Mr. Jerry Evans
Instructor
Mr. Howard Johnson
Instructor

Team Members

Mr. John Dockery
Auto Mechanic Instructor
John H. Hinds Area Vocational School
Rural Route # 4 - North 19th Street
Elwood, Indiana 46036

Mr. Marson Rinkenberber
Curriculum Consultant
Statewide Curriculum Articulation Center
Frost and Manton
Maplewood, Minnesota 55109

PHASE II AMTEP SITE VISITS(S) AND TEAM MEMBERS

March 9 - 11, 1980

Upper Valley Joint Vocational School District 8811 career Drive Piqua, Ohio 45356	Mr. Luther J. Landis Senior Auto Mechanic Instructor

March 12 - 14, 1980

Illinois Central College Community College District No. 514 East Peoria, Illinois 61636	Dr. Kent Collins Chairman, Automotive-Diesel Technology

Team Members

Mr. Chuck Kraft
Westmoreland County Community College
Central Campus
Youngwood, Pennsylvania 15697

Mr. Cecil Brewer
Tarrant County Junior College
4801 Marine Creek Parkway
Fort Worth, Texas 76179

March 23 - 25, 1980

Utah Technical College 4600 South Redwood Road Salt Lake City, Utah 84107	Mr. Neal Grover Machine Trades Dean

March 26 - 28, 1980

Glendale Community College 6000 West Olive Avenue Glendale, Arizona 85302	Mr. Dick King Automotive Department

Team Members

Mr. Eugene White
Automotive Mechanics Instructor
L.H. Bates Vocational-Technical Institute
1101 South Yakima Avenue
Tacoma, Washington 98404

Mr. James S. Robinson
Citrus College
18824 east Foothill Blvd
Azusa, California 91720

PHASE II AMTEP SITE VISIT(S) AND TEAM MEMBERS

April 7 - 9, 1980

Wilson County Technical Institute
902 Herring Avenue
Wilson, North Carolina 27893

Mr. Warren Page

April 9 - 11, 1980

Trident Technical College
P. O. Box 10367
Charleston, South Carolina 29441

Dr. James M. Mazur

Team Members

Mr. Bill Stoops
Columbus Area Vocational-Technical School
928 45th Street
Columbus, Georgia 31904

Mr. Bill Wieser
Coordinator of Industrial Arts
and Industrial Education
Hillsborough County Public Schools
107 West Ross Avenue
Tampa, Florida 33602

April 13 - 15, 1980

Memphis Area Vocational-Technical School
620 Mosby Avenue
Memphis, Tennessee 38105

Mr. Guy Treece
Director

April 16 - 18, 1980

Copiah-Lincoln Junior College
P. O. Box 457
Wesson, Mississippi 39191

Dr. Charles P. Creely

Team Members

Dr. Mike Bailey
Great Plains Vocational-Technical Center
4500 West Lee Blvd
Lawton, Oklahoma 73505

Mr. Al Santini, Chairman
Automotive Department
College of DuPage
Glen Ellyn, Illinois 60137

PHASE II AMTEP SITE VISIT(S) AND TEAM MEMBERS

April 27 - 29, 1980

Warwick Area Vocational- Technical Facility 575 Centerville Road Warwick, Rhode Island 02886	Mr. John J. Gunson

April 30 - May 2, 1980

Regiona 8 Cooperative Board for Vocational Education One Main Street Rockland, Maine 04841	Mr. Denis L. Moonan

Team Members

Mr. William Kersten
NIASE
1825 K Street N. W.
Washington, D. C. 20006

Dr. James Hanneman
Oakland Schools
2100 Pontiac Lake Road
Pontiac, Michigan 48054

May 4 - 6, 1980

Phelps Career Development Center 24th and Benning Road N.E. Washington, D. C. 20004	Mr. Perry Cook

May 7 - 9, 1980

Piedmont Virginia Community College Route 6, Box 1A Charlottesville, Virginia 22901	Dr. James Perkins

Team Members

Mr. Tom Hinds, Director
Instructional Material Lab
Ohio State University
Columbus, Ohio 43210

Mr. Ron Ragazzi, Chief
Technical Training Section
National Center for Motor Vehicle
Emission Control and Safety
Department of Industrial Sciences
Colorado State University
Fort Collins, Colorado 80523

PHASE II AMTEP SITE VISIT(S) AND TEAM MEMBERS

May 26 - 28, 1980

Pine City Area Vocational-
Technical Institute
Pine City, Minnesota 55063

Mr. Ed Olson

May 28 - 30, 1980

Scott Community College
Belmont Road
Bettendorf, Iowa 52722

Mr. Mike Jund

Team Members

Mr. Al Engeldahl
Automotive Department
Davia Center
301 North Swift Road
Addison, Illinois 60101

Mr. Donald Olson, Program Director
Engineering Technology Department
Lansing Community College
419 N. Capitol Avenue
Lansing, Michigan 48901

June 9 - 10, 1980

Indiana Vocational-Technical College
8204 Highway 31 West
Sellersburg, Indiana 47172

Mr. Charles T. Szalay
Program Coordinator

June 11 - 12, 1980

Jefferson State Vocational-
Technical School and Manpower
Skill Center
727 West Chestnut Street
Louisville, Kentucky 40302

Mr. James Woodrow
Principal

Team Members

Mr. Pete Dembaugh
Trident Technical College
P.O. Box 10367
Charleston, S. C. 29441

Dr. Kent Collins, Chairman
Automotive-Diesel Technology
Illinois Central College
Community College District No. 514
East Peoria, Illinois 61635

PHASE III AMTEP SITE VISIT(S) AND TEAM MEMBERS

November 3 - 4, 1980

L. H. Bates Vocational-Technical Institute
1101 South Yakima Avenue
Tacoma, Washington 98405

Mr. Milton S. Rouse
Administrative Director

November 6 - 7, 1980

Yuba Community College
North Beal & Linda Avenue
Marysville, California 95901

Mr. Bob Barkhouse
Automotive Technology Instructor

Team Members

Mr. Roy Read
Casper College
125 College Drive
Casper, Wyoming 82601

Mr. Dondavid Powell
Automotive Department
Ricks College
Rexburg, Idaho 83440

January 26 - 27, 1981

Casper College
125 College Drive
Casper, Wyoming 82601

Dr. Al Skillman
Dean

January 29 - 30, 1981

Mid Plains Community College
Highway 83 and Interstate 80
North Platte, Nebraska 69101

Mr. Kenneth L. Atken
President

Team Members

Larry Fanucchi, Professor
Industrial Education Department
Bakersfield Community College
1801 Panorama Drive
Bakersfield, CA 93305

Mr. Chuck Pendegrass
South Oklahoma City Junior College
7777 South May
Oklahoma City, Oklahoma 73195

PHASE III AMTEP SITE VISIT(S) AND TEAM MEMBERS

March 29 - 31, 1981

Alfred State College
South Brooklyn Avenue
Wellsville, New York 14895

Dr. David Huntington
President

April 1 - 3, 1981

Vale Technical Center
Blairsville, Pennsylvania 15717

Dr. William A. Hart
Executive Director

Team Members

Mr. Sid Barnes
New Hampshire Vocational-Technical College
505 Amherst Street
Nashua, New Hampshire 03060

Dr. James Hanneman
Oakland Schools
2100 Pontiac Lake Road
Pontiac, Michigan 48054

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

LETTER TO TEAM MEMBERS

I enjoyed talking with you earlier and appreciate your willingness to participate in the field test of procedures and standards of the Automobile Mechanic Training Evaluation Project (AMTEP).

We would like you to serve on the site team visit to two program locations in __________ and __________ during the week of _________. The schedule will be from Sunday through Friday afternoon. We will meet Sunday afternoon, for an orientation session prior to the Monday and Tuesday visit to _________. At this first session, we will outline specific procedures for the visit, and review the evaluation reporting material and reporting procedure to be used. The tentative schedule for the week will be as follows:

SUNDAY	Travel from residence to Site I; arrive by 2:00pm 3:00 PM - 6:00 PM - Orientation Meeting at Motel 7:00 PM - 9:00 PM - Dinner/Team and Program Faculty
MONDAY	8:00 AM - 4:00 PM - Site Visit
TUESDAY	8:00 AM - 12:00 Noon -Site Visit 1:00 PM - Report findings to Staff and Faculty
WEDNESDAY	Travel from Site I to Site II
THURSDAY	8:00 AM - 4:00 PM - Site Visit
FRIDAY	8:00 AM - 12:00 Noon - Site Visit 1:00 PM - Report findings to Staff and Faculty 4:00 PM - Depart to residence

We will reimburse you for all travel and lodging expenses, and provide an honorarium for the school visit days.

We will reserve rooms for the team at a local motel at the sites but you must make your own travel arrangements from your place of residence to Site I, and from Site II returning home. The AMTEP Office will make the necessary arrangements between Site I and II in order that the team may travel together. You will receive additional information relative to lodging and between site travel arrangements at a later date.

If you have any questions, please call me. I'm looking forward to working with you on this project.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
  Evaluation Project (AMTEP)

CL/pdw

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

LETTER TO SITE

Thank you for your interest in participating as a pilot site in the Automobile Mechanic Training Evaluation Project (AMTEP).

AMTEP is administered by the Commission on Occupational Education Institutions, one of the four accreditation commissions of the Southern Association of Colleges and Schools of Atlanta, Georgia. Project funding is provided by grants from the Motor Vehicle Manufacturers Association of the United states, Inc. The project started in January, 1979 and is scheduled for completion in 1981.

The purpose of AMTEP is to develop evaluative criteria needed for the accreditation of automobile mechanic training programs. This project is national in scope and involves automobile mechanics and supervisors, instructors, vocational education administrators, evaluators and others in a concerted effort to improve the quality of automobile mechanic training programs. Improved training should, of course, result in improved service to consumers.

Project activities will be conducted in three phases. Phase I included state-of-the-art research, initial identification of performance standards, and project start-up activities. Phase II and III involve the development, validation, and revision of evaluative criteria. These criteria will be employed in a process of self-study and external evaluation. Phase II, now under way, will include field tests at six sites, then later at 20 sites. Phase III will include the final validation of the criteria at 50 sites throughout the United states.

The project utilizies three committees for program development. The Performance Standards Committee will identify tasks of incumbent automobile mechanics and performance standards in six major areas of automobile repair. The Program Standards

Committee will identify evaluative criteria and procedures to be used in the accreditation process. The Pesonal Standards Committee will identify attitudes, behaviors, and interpersonal skills considered necessary or desirable for success as an automobile mechanic.

Your program has been selected as a good representative of your georgraphic region and as an example of high quality vocational training. The purpose of this site visit is to initially validate the criteria and the evaluation procedures that have been developed.

As a validation site, your initial activities will involve the following:

1) Completion of a self evaluation instrument (requiring a maximum of four hours to complete) which will be provided to you prior to the team visit. Additional material relative to the criteria developed will also be provided which will assist you in self improvement.

2) Hosting a two member site team for two days. A staff member will also accompany the team. The team will meet with school staff, students, advisory committee members, and administration. At the conclusion a statement of findings will be presented to the staff. No special arrangments need to be made for the team except to alert the staff and students about the site visit.

3) At a later date, an instructor from your program may be asked to participate on other visiting teams to another program, at no cost to your institution.

We would like to schedule the site visit to your automobile mechanic training program on (date) . Please indicate to us, in writing, your willingness to participate on this date. We will then make arrangements for the site team and for housing and transportation.

We are looking forward to working with you and your staff for the furtherance of vocational edcation.

If you have questions, please feel free to call me.

Sincerely,

B. E. Childers, Executive Director
Commission on Occcupational Education
Institutions (COEI)
Project Coordinator, Automobile Mechanics
Training Evaluation Project (AMTEP)

Charles Losh, Director
Automobile Mechanics Training
Evaluation Project (AMTEP)

BEC:CL:pdw

Enclosures: Brochure
PERT Chart

SCHOOL INFORMATION

SCHOOL NAME: ______________________________

ADDRESS ______________________________ PHONE ____________

CHIEF OPERATING OFFICER ______________________________

PRIMARY ASSISTANT ______________________________

STUDENT SERVICE PERSON ______________________________

VOCATIONAL COUNSELOR ______________________________

AUTOMOBILE DEPARTMENT HEAD ______________________________

INSTRUCTORS ______________________________

____

____

____

____

____

NUMBER OF STUDENTS IN PROGRAM ______________________________

LEVEL OF STUDENTS (Secondary/postsecondary/mix. If mix, percentages):

____

____

LENGTH OF AUTOMOBILE PROGRAM(S) ______________________________

****

DINNER/BREAKFAST ARRANGEMENTS

DATE ______________________________ TIME ____________

LOCATION ______________________________

____

APPENDIX R

SITE VISIT SCHEDULE (DAILY)

TENTATIVE AGENDA

CERTIFICATION TEAM SITE VISIT

(ALL TIMES APPROXIMATE)

Evening prior to visit or first morning visit:

Meal with program faculty and administrator(s)

FIRST DAY

8:30 A.M.	Arrival at school; tour facilities
9:00 A.M.	Review self-study materials with Department Chairman and/or instructor(s)
12:00 NOON	LUNCH
1:00 P.M.	Visit automobile mechanic/technician training area, confer with former students, advisory committee members, local employers, etc.
4:30 P.M.	Adjourn for the day

SECOND DAY

8:30 A.M.	Arrive at school Continue program review and conferences
12:00 NOON	LUNCH
1:30 P.M.	Report to automobile mechanic/technician training program faculty and administrator(s) Conclude site visit

APPENDIX S

PROJECT PARTICIPANT LETTERS

PERFORMANCE STANDARDS REVIEW

337

MEMORANDUM

2/13/81

TO: AMTEP PARTICIPANTS

FROM: CHARLES LOSH, PROJECT DIRECTOR Chas.

RE: PROJECT FEEDBACK

As a part of the project, we are concerned about the effect of your participation in the project on your program, and if changes were made as a result of your participation. We are also interested in your thoughts about the standards, procedures or the materials you have recieved as a project participant.

Specifically, what effect did participating in the project have on these program areas?

a) Program structure
b) Program policies
c) Program support activities such as:
    1) Student services
    2) Budgeting
    3) Other
d) Facility
e) Equipment
f) Other

Please give the above items some thought and send me your response, so we can include them in the Phase III project report.

The second area I would like your thoughts on deals with the industry end of the training picture. What do you think the automotive service industry (manufacturing, service and parts) could or should do to help improve automobile mechanic/technician training programs?

Finally, would you review the draft performance standards which start on page 182 of the 2nd Annual Report. As you go through each standard ask yourself this question. "Does this standard identify or describe the result of competent performance of this task?" If you feel it doesn't, please suggest a better standard, recalling this is to be shared with the student prior to training and testing. It will be used by the student and instructor for guidance in determining if the task has been properly/competently performed. This is the final validation of these standard items, so please take some time to review them.

For those of you who have problems with students who cannot read at the level they should,and the school has an "open door" policy, I have enclosed a copy of an article which should be of interest to you. I feel, as you know, that this is a major problem facing the automotive service industry to-day, and is certainly one of the most-if not the most- important factor in training the mechanic/technician of tomorrow. So, this should be helpful ammunition in the effort to improve the reading levels of our program entrants.

I don't have any more information at this time on project implementation, but I will let you know as soon as something definite is established. Once again, thanks for your help.

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 897-6100 Area Code 404

May 19, 1981

THIS LETTER SENT TO PERFORMANCE STANDARD COMMITTEE MEMBERS

Dear:

I have enclosed the results of the Automobile Mechanic/Technician Survey for your information. Rather than say to the user, "here it is," I have developed a structure for the tasks, and a tool and equipment list to coincide with the different phases and speciality areas. Please review this material, and if there are errors or obvious discrepencies please let me know. This is the primary document from the project which details the recommended structure for an automobile mechanic/technician training program. Therefore, if there are problems with it I need to know before it is published.

I would also like to provide this final opportunity for input on the performance standards. Please take time to review the draft performance standards in the second annual report and if you have recommended changes, forward them to me as soon as possible or by June 3, 1981.

The changes by area, title, and task number follow:

AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT
Phone 897-6156 Area Code 404

STEERING SYSTEM

8. "Will not" TO "must not"
9. Add "except in over center position" between "lock", and "all"
11. "Will not" TO "must not"
12. "Will not" TO "must not"
14. "Will not" TO "must not"
15. "Will not" TO "must not"
20. "Will not" TO "must not"

MANUAL TRANSMISSION

10. "Does not" TO "must not"
11. "Does not" TO "must not"
13. "Does not" TO "must not"

BRAKES

4. "Will be" TO "must be"
5. "Will be" TO 'must be"
14. "Will operate with no" TO "must not"
15. Delete the words - obsolete task - according to the survey, mechanics are still cam grinding brake shoes and if so, students should know the asbestos precautions since they may run into it on the job.
17. "Will be" TO "must be"

HEATING AND AIR CONDITIONING

11. Delete "switch"
18. Change "electronic tester" TO "halide torch"

IGNITION SYSTEM

3. Add "must be" between screws and secured, change "inserted" TO "connected to the distributor cap."
9. Change "inserted" TO "connected to"
24. Change "inserted" TO "connected to"

FUEL SYSTEM

3. NOT "the same as 2". Standard should be: "Idle speed variation outside of manufacturers specifications must be detected."
4. Add "and exhaust emissions" between "mixture" and "must"

EMISSIONS CONTROL SYSTEMS

1. Change "Emission levels exceeding" to "Idle speed variation outside of"

ELECTRICAL SYSTEMS

8. Delete "and mounted properly". It is redundant.

CYLINDER HEAD AND VALVE TRAIN

6. Add "tolerances" between "component" and "must"

I'm sorry to report that as of this date, implementation of the program review and certification process is still a question mark. Work is proceeding by MVMA and IPC representatives on implementation, but no decisions have been made. Obviously, I will keep you informed on the status. I'll also send you the project report some time this summer.

Thank you for your help on the project, without contributions from those such as yourself, we could not have accomplished what we have. I hope that we will be able to work together again in the future.

Sincerely,

Charles Losh, Director
Automobile Mechanic Training
Evaluation Project (AMTEP)

CL/pdw

Enclosure: A task List, Tool List, and Structural Guide for Automobile Mechanic/Technician Training Programs

APPENDIX T

AVA CONFERENCE

LETTER OF INVITATION

AGENDA

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30365
Phone 897-6100 Area Code 404

October 20, 1980

Dear Fellow Vocational Educator:

The Automobile Mechanic Training Evaluation Project (AMTEP) is a project sponsored by the Motor Vehicle Manufacturers Association of America Inc., (MVMA). MVMA is the representative of the automobile production industry, and as such, is interested in improving the quality of automobile service across the country. MVMA is sponsoring AMTEP in an effort to improve service through the improvement of programs which train automobile mechanics.

AMTEP has developed and is validating Performance, Program, and Personal Standards to be used for automotive training program review and certification/accreditation.

A special meeting dealing with implementation of the standards and evaluation procedures is scheduled during the annual convention of the American Vocational Association.

DATE: Saturday, December 6, 1980 (2:00PM - 4:30PM)
LOCATION: Room 5, Rivergate Convention Center
New Orleans, Louisiana

We solicit your attendance at this meeting. This is a critical step in improving the quality of service to the consumer, the quality of automobile mechanic training programs and the image of vocational education.

We look forward to seeing you in New Orleans! If you cannot attend, or know other people who would be interested in attending, please let us know. Please call if you have questions.

Sincerely,

B. E. Childers

B. E. Childers, Executive Director
Commission on Occupational Education Institutions
Project Coordinator, AMTEP

Charles Losh

Charles Losh, Director, AMTEP

Enclosures: Agenda
Response Card

AGENDA
AUTOMOBILE MECHANIC TRAINING EVALUATION PROJECT MEETING
SATURDAY, DECEMBER 6, 1980
ROOM 5 - RIVERGATE CONVENTION CENTER
NEW ORLEANS, LOUSISIANA
2:00 - 4:30PM

2:00 - Opening Remarks	Burck E. Grosse Director, Product Service Division General Motors Corporation Industry Planning Council Co-Chairman
2:15 - AMTEP Background	Jack Sampson Chairman, Energy and Transportation Department University of Wisconsin Industry Planning Council Co-Chairman
2:30 - Accreditation/Certification "The Egg Shell"	B. E. Childers, Executive Director Commission on Occupational Education Institutions Southern Association of Colleges and Schools Project Coordinator, AMTEP
2:55 - Break	
3:05 - AMTEP - The Process	Charles Losh, Project Director Automobile Mechanic Training Evaluation Project (AMTEP) Southern Association of Colleges and Schools
3:30 - Implementation - "The Possibilities"	B. E. Childers
3:45 - Panel with Open Discussion Automobile Mechanic Training Program Accreditation/Certification	.Cecil Brewer Associate Dean of Technical/Occupational Programs Cedar Valley College Dallas, Texas .Kent Collins Department Chairman Automotive Diesel Technology Department Illinois Central College East Peoria, Illinois .John Gunson Area Coordinator Warwick Area Vocational-Technical Facility Warwick, Rhode Island .Billy Myers Department Chairman Evening Automotive Program Azusa College Azusa, California .Bill Stoops Department Head Automotive Department Columbus Area Vocational-Technical School Columbus, Georgia
4:15 - Action for Future	
4:30 - Adjourn	

APPENDIX U

LETTERS TO REGIONAL ACCREDITATION AGENCIES

March 19, 1980

Mr. Gordon Sweet, Executive Director
Commission on Colleges
Southern Association of Colleges and Schools
795 Peachtree Street N.E.
Atlanta, Georgia 30308

Dear Gordon:

The second phase of the Automobile Mechanic Training Evaluation Project (AMTEP) involves a field test of the standards, criteria, and procedures at 20 different sites. The following school(s) in your region have agreed to participate in the project as Phase II field test sites.

1. Wilson County Technical Institute - Wilson, N.C.
2. Trident Technical College - Charleston, S. C.
3. Copiah-Lincoln Junior College - Wesson, Miss.
4. Piedmont Virginia Community College - Charlottesville, Va.

Further schools may be selected in your Region during the remainder of Phase II and during Phase III. Each site will be visited by a two member team and a staff member. Because of your interest in this project you may like to visit with the team and school while the team is on site. We would be pleased to have you or a representative meet with the team.

If you have questions about the visit or would like to send a representative, let me know. Thank you for your assistance and interest in this project.

Sincerely,

B. E. Childers, Executive Director
Commission on Occupational Education Institutions

Charles Losh, Director
Automobile Mechanic Training Evaluation Project (AMTEP)

December 18, 1980

Dr. Daniel S. Maloney, Director of Evaluation
New England Association of Schools and Colleges
131 Middlesex Turnpike
Burlington, Massachusetts 01803

Dear Dan:

Thank you for your response to our request for an AMTEP staff representative to join one of your accreditation site visits. Recognizing the relatively late date of our request and the status of the institutions self-study activities, we would like the AMTEP staff representative to be an observor on the site visit. This will eliminate the need for the site's preparation of AMTEP self-study materials at this late date.

As a part of the AMTEP field study activities, however, we would like the automobile mechanic training program personnel to review the AMTEP Program Standards, evaluation guide and other materials included in the Second Annual Report. This activity will provide feedback relative to the validity and utility of the procedures and materials through on site discussion with program personnel.

The AMTEP staff representative will also develop an informal site report for you and the site administration, if you and the administration consider this appropriate. The report will be directly related to the items in the AMTEP evaluation guide, and may be considered a consultants report, useful for program improvement in the areas of the AMTEP standards.

We would like to accompany the visiting team to Norwich Regional Vocational-Technical School, Norwich, Connecticut on March 24-26, 1981. If this general outline meets with your approval, please let me know. Would you prefer that we directly contact the school and provide materials for the school personnel to review, or would you prefer to forward the materials?

To answer concerns evidenced by some about proliferation of accreditation agencies, the primary implementation mode being considered at this time is not the establishment of another independent agency. Implementation of the materials will probably be carried out through joint activity involving the existing regional institutional agencies and the state program review agencies. The specific coordinating agency and types of activity have not been determined, but the automotive industry does have a commitment to implementation in some mode.

Dan, thank you for your help, and I hope to be hearing from you in the near future.

Best Wishes for the Holidays,

B. E. Childers, Executive Director
Commission on Occupational Education Institutions

BEC/pcw

APPENDIX V

A TASK LIST WITH PERFORMANCE STANDARDS, A TOOL LIST AND A STRUCTURAL GUIDE FOR AUTOMOBILE MECHANIC/TECHNICIAN TRAINING PROGRAMS

A TASK LIST
with
PERFORMANCE STANDARDS,
A TOOL LIST
and
A STRUCTURAL GUIDE
for
AUTOMOBILE MECHANIC/TECHNICIAN
TRAINING PROGRAMS

Charles Losh

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A TASK LIST
with
PERFORMANCE STANDARDS,
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A STRUCTURAL GUIDE
for
AUTOMOBILE MECHANIC/TECHNICIAN
TRAINING PROGRAMS

July, 1981

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PREFACE

This manual is a product of the Automobile Mechanic Training Evaluation Project (AMTEP), a project sponsored by the Motor Vehicle Manufacturers of The United States, Inc. (MVMA). The project was administered by the Commission on Occupational Education Institutions (COEI) of the Southern Association of Colleges and Schools (SACS), Atlanta, Georgia.

For information on the project, see the AMTEP Final Report, July, 1981, or contact ______________________________.

ACKNOWLEDGEMENTS

The task list and performance standards in this manual were developed with the assistance of the Performance Standards Committee, one of three developmental committees of the Automobile Mechanic Training Evaluation Project (AMTEP). AMTEP was a 2 1/2 year development project sponsored by the Motor Vehicle Manufacturer's Association of the United States, Inc. (MVMA) to improve the quality of service to consumers through the improvement of the quality of vocational student training. Members of the Performance Standards Committee were:

Hugh Dawkins, Auto Mechanic Instructor
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In addition, more than 100 project participants nationwide reviewed various portions of the manual and provided input into the final document. These people are too numerous to name here, but their names are included in the AMTEP FINAL REPORT, 1981.

And finally, Mrs. Patti Williams, AMTEP Secretary. Without her help, it would not have been possible to provide this material to the vocational education community.

INTRODUCTION

Three elements of automobile mechanic/technician training programs development/review/updating are covered in this manual. These elements include an automobile mechanic/technician task list with Performance Standards for the validated tasks, a section covering tools and equipment (which correspond to the task list) and finally, a model for the training delivery system.

The materials presented here are meant to be GUIDELINES, and are the suggested method of structuring a program. Many other elements dealing with inputs to and desired outputs from the program impact on the training program, but to a lesser degree than items in the primary delivery area -- the shop and curriculum content.

IDENTIFYING PROGRAM GOALS AND CONTENT

The first step in establishing a new program or reviewing an existing automobile mechanic/technician training program is identifying the specific program goals and objectives. The recommended basic goal, and the underlying philosophy used in developing materials in this guide, is simply stated:

The primary purposes/goals of an automobile mechanic/technican training program are to train people for employment in the automobile service industry, and to upgrade the knowledge and skill of those presently in the automobile service industry.

Other goals, objectives and outcomes can be projected for vocational training programs. Focusing the goals, however, provides program developers and evaluators with a clearer picture of program intent. The primary concern in any vocational program is the development of salable skills in those who are in the program, as efficiently and cost effectively as possible.

As part of the Automobile Mechanic Training Evaluation Project (AMTEP), a 1980 survey (Appendix) indicated that competent, experienced mechanics were performing nearly 400 discrete tasks[1] in the field (this task list begins on Page 12). This means that it is impractical, and is probably impossible, to train students to competently perform all 400 tasks during one time period, even though the training program may extend over a two year period. The school administration and staff must determine which specialty areas and tasks the training program will cover. This decision is not an easy one. Many inputs must be considered, with funds available for program start up, operation costs, and local or regional requirements for mechanics/technicians being primary determinants.

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[1] TASK. A task (statement) describes a unit of work activity which has an identifiable beginning and ending point in its accomplishment, and consists of two or more observable steps.

The primary factor in any decision about course offerings is the need for employees in the local/regional automotive service industry. This need can be determined by contact with local industry through formal surveys, and continuous informal contacts with dealers and independent automotive repair shops. Operating without continuous links to local industry will not provide the type of input needed for a quality program. Local employers must be involved in the program for it to be as successful as possible, and to make the best use of the funds used to support the program.

It is critical to note that local/regional employment conditions will effect the program. An example would be the prevailing wage rate — both entry level and skilled. If the entry level wage is low, and completion of a training program makes little or no difference in the beginning wage, the question of how much training a person needs to enter into the local labor market must be addressed. Program design and student counseling must reflect the situation. If, on the other hand, the entry level wage is higher for those who are competent in a specialty area or have completed a training program, different decisions can be made as to the complexity of the program offerings.

Another example deals with high wage rates for skilled employees. A high labor cost may preclude the performance of tasks dealing with rebuilding or overhaul of many components of the vehicle. When this is the case, the inclusion of these tasks

BASIC AUTOMOTIVE D.O.T. TITLE AUTOMOTIVE SERVICE STATION ATTENDANT D.O.T. CODE #915.467-010	FRONT END SPECIALIST D.O.T. CODE #620.281-038
	BRAKE SPECIALIST D.O.T. CODE #620.281-026
	HEATING AND AIR CONDITIONING SPECIALIST D.O.T. CODE #620.281-010
	ENGINE TUNE UP SPECIALIST D.O.T. CODE #620.281-066
	AUTOMATIC TRANSMISSION SPECIALIST D.O.T. CODE #620.281-062
	ELECTRICAL SYSTEM SPECIALIST D.O.T. CODE #620.281-022
	MANUAL TRANSMISSION AND REAR AXLE SPECIALIST D.O.T. CODE #620.261-010
	ENGINE REPAIR SPECIALIST D.O.T. CODE #620.261-010
NOTE: The basic course is a prerequisite for all courses on the right. It also provides training for entry into the automotive service and repair occupation.	AUTOMOBILE MECHANIC D.O.T. #620.261-010 [Includes all "H.P." (High Priority) tasks and related theory in the above speciality areas]

Figure 1

in the curriculum should be carefully reviewed. In all programs, the development of diagnostic problem solving abilities is foremost. One should not be concerned with a "parts replacer," if the problem is correctly diagnosed and the proper part replaced the first time.

PROGRAM STRUCTURE

Because preparation for employment in the automotive service industry is the primary program goal, a basic course which leads directly to employment or further training (Figure 1) is the basis of the program structure outlined in this guide. This basic course provides the skills needed to obtain employment in the automotive service industry. The course is structured to familiarize the student with the automobile, its systems, their operation and interrelation. The course also provides hands on experience in performance of a set of basic tasks required for daily maintenance of the vehicle. These basic knowledges, skills, and abilities should make the student employable in a dealership entry level position, a mass merchandiser operation, service station or other organization which requires lower levels of skills or starts people at the bottom, regardless of the training they have received.

Completion of the basic course will, as mentioned earlier, allow the student to move directly into training for employment in a specialty area such as front end and suspension, and be employed during the time he/she is not in school. This will provide the student with a method of financing his/her schooling and obtaining that most valuable commodity, on the job experience.

The implementation of a basic course as a prerequisite for entry into well defined specialty training courses, all based on a task list with performance standards, will aid in developing another tax dollar saving activity - articulation. In order to articulate (coordinate) among or between programs, a common structure for training must be used. The common structure proposed here is one based on tasks and groups of tasks divided into specialty areas. The tasks in the specialty areas are identified as basic and/or "H.P." (High Priority). The "H.P." (High Priority) designation indicates that the task must be included in any specialty area in which the program is seeking certification.

This program structure for specialty area training (Figure 1) coincides with major subsystems of the automobile and the National Institute for Automotive Service Excellence (NIASE) mechanic/technician test areas. This system provides for training in an area(s) for competency in task performance, and development of the knowledge base needed to pass the NIASE test in that area. Theory and performance coverage of tasks in an area(s) will also qualify the program for certification in one or more of the specialty areas.

Given the complexity of the vehicle and its systems, it is not realistic to expect more than a few students to be able to competently perform all "H.P." (High Priority) tasks and pass the NIASE tests in all eight areas. It is not unreasonable, however, to expect success in two or three of the eight areas. Competency in at least two areas will increase the probability of student success in the occupation, if he or she continues to expand his/her existing knowledge base after being employed as an automobile mechanic/technician.

The program structure (Figure 1) includes the Dictionary of Occupational Titles (D.O.T) titles and codes associated with the basic course, the specialty courses, and finally, the D.O.T. title -- Automobile Mechanic -- for a program which includes all of the "H.P." tasks in all specialty areas. The D.O.T. codes and titles are included for use in developing a course structure that is not only logical, but can be used to meet existing federal requirements for reporting by D.O.T. code. D.O.T. titles may or may not reflect the real world, and they may have negative or limiting connotations (service station attendant is a good example). Therefore, the course title in the school catalog and brochures needs to be titled in more attractive terms. As an example, "Basic Automotive" is a good replacement title for service station attendant.

In structuring the program offerings, the basic course should be offered each quarter or semester. This will provide all entering students the same opportunities for employment and entry into specialty areas.

Some specialty areas will require more than a quarter or semester of instruction, depending on the complexity of the area. Another factor in program design is the actual number of shop/lab hours available for hands-on experience. This will impact on the level or depth of manipulative skill the student is able to develop. Judgement on the length of courses must be made locally, and depend on such factors as the level of the students and the skill level requirements of local employers.

This guide does not indicate specific theory instruction to be covered in the program. This is not an oversight, but a local developmental responsibility. There are many texts and curriculum packages available which can be used, all of which cover the topics to a greater or lesser degree. As an example, many states have curriculum packages which cover these areas.

The concern of this guide is not the training delivery system. The concern is the structure of the program and the identification of tasks within the structure that a trained student must competently perform. The methods used to get the student to competency in task performance are a local option. The goals of this guide are to identify the tasks in the areas, provide an indication of their relationship and level, and state a standard of performance for each task.

For a student to be able to competently perform a task, the instructor must determine what the student needs to know to competently perform that task when tested or on the job. The curriculum can then be developed with the tasks identified in each of the specialty areas as the base, thereby providing skill training the student will need on the job.

TASK LIST

The basic component of any curriculum or training delivery system is a validated task list. Through the development and validation of a list of tasks presently performed by automobile mechanic/technicians, a solid base for decision making is available. The use of a task list also facilitates communication and articulation with other institutions in the region that have offerings in the same or a similar area. This is especially critical in the automotive field, where the majority of secondary and two year postsecondary institutions offer automotive courses.

The automobile mechanic/technician task list in this guide (pp. 11-38) was validated by a group (Appendix) of mechanics/technicians who had passed one or more of the National Institute for Automotive Service Excellence (NIASE) exams. This population was chosen, (rather than attempting to survey the entire universe of automobile mechanics), to identify tasks performed by recognized competent automotive service personnel. Entry level personnel were not included in this survey.

Local employers must be surveyed to determine the answer to the following question: "Which specialty areas and tasks must our training program include for you to hire our completors?" The program advisory committee, which must be representative of the local industry can provide the majority of the required information.

The tasks in the specialty areas are sequenced in a logical manner, but this does not mean that this sequence is any better or worse than one the user may establish.

The majority of tasks have two sets of identifiers associated with each task. The first number is the percent of the mechanics/ technicians responding to the survey that indicated they performed this task. The second space may include an "H.P." (High Priority) indicating the task must be included for specialty certification in the area, and may also include the word "basic" which indicates the task should be included in the basic automobile course.

Theory instruction and hands on performance of all the basic tasks will provide training for employment in the automotive service field, or further training in any or all of the specialty areas indentified in Figure 1. Competency in performance of the "H.P." tasks will indicate to employers that the completor is skilled in that area. Competency in performance of all "basic" and "H.P." tasks in all specialty areas would prepare the student for the exit point called Automobile Mechanic, D.O.T. Code # 620.261-010. In all areas, appropriate theory, safety and support instruction will be required for course completion. Once again, local needs for skilled mechanics/technicians will dictate the specialty areas covered.

The Performance Standards for the validated tasks begin on page 60 of this guide. These Performance Standards are the basic component of a performance test. Test development is the responsibility at the local level, as is the identification of the training delivery system.

ASSUMPTIONS

In any R & R (Remove and Replace) task -

The replacement unit is O.K. It may be rebuilt or new but will require no trouble-shooting.

In any rebuild task -

The mechanic who does the rebuilding may or may not be the mechanic who R & R's the part.

In any test, check, inspect, or measure task -

The mechanic that tests or checks may or may not be the one who rebuilds or R & R's the part.

DEFINITIONS

CHECK - To verify by visual examination or comparison.
TEST - Task which uses meters or gauges.
MEASURE - Task to determine dimensions.
INSPECT - To visually examine carefully, verify.

NOTE:

For many of the test, check, inspect, or measure tasks, the performance standard is -- "detecting a deviation from manufacturer's specifications." In this type of task, the instructor must develop the training so that upon the completion of instruction (at test time), the student will be able to: 1) Determine the manufacturer's specification for that specific vehicle, 2) Determine if the unit or sub-system that task is concerned with is within the manufacturer's specifications. In other words, be able to trouble shoot (diagnose) a problem.

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AUTOMOBILE MECHANIC/TECHNICIAN TASK LIST

FRONT END	PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)		
SUSPENSION		
1. Inspect suspension system for worn parts (001)	87	BASIC, H.P.
2. R & R suspension bushings (002)	76	H.P.
3. Inspect tires and wheels for damage and irregular wear (003)	84	BASIC, H.P.
4. R & R front wheel bearings (drum brakes) (004)	86	H.P.
5. R & R front wheel bearings (disc brakes) (005)	88	H.P.
6. Repack wheel bearings (006)	88	H.P.
7. R & R shock absorbers (007)	86	BASIC, H.P.
8. R & R control arms (008)	79	H.P.
9. R & R ball joints (009)	82	H.P.
10. R & R torsion bar (010)	63	H.P.
11. R & R coil springs (011)	71	H.P.
12. R & R king pins (012)	59	
13. R & R spindle (013)	71	H.P.
14. R & R McPherson strut assembly (014)	53	H.P.
15. Rebuild McPherson strut assembly (015)	44	H.P.

16. R & R trunion pin assembly (016)	28	
17. R & R leaf spring assembly (017)	71	H.P.
18. R & R spring hangers	*	
19. R & R I Beam	*	
20. R & R stablizer and bushings	*	

*Task not included in survey

STEERING SYSTEM

1. Inspect steering gear and linkage for worn parts (018)	82	BASIC, H.P.
2. Check and service fluid level (019)	87	BASIC, H.P.
3. Lubricate steering gear and linkage (020)	83	BASIC, H.P.
4. Test tire pressure (021)	84	BASIC, H.P.
5. Rotate tires (022)	83	BASIC, H.P.
6. Balance wheel and tire assembly (023)	72	H.P.
7. Adjust steering sector (024)	86	H.P.
8. R & R steering linkage components (025)	80	H.P.
9. R & R manual steering sector (026)	70	H.P.
10. R & R steering damper (027)	61	H.P.
11. R & R power steering hoses (028)	83	H.P.
12. R & R belt/belts and set tension (029)	86	BASIC, H.P.
13. R & R power steering cylinder (030)	71	H.P.
14. Rebuild power steering cylinder (031)	43	
15. R & R power steering control valve assembly (032)	55	H.P.
16. Rebuild power steering control valve assembly (033)	41	

.15

17. R & R power steering pump (034)	76	H.P.
18. Rebuild power steering pump (035)	43	H.P.
19. Rebuild rack and pinion power steering assembly (036)	30	H.P.
20. Rebuild rack and pinion manual steering assembly (037)	26	H.P.
21. Adjust toe-in (038)	62	H.P.
22. Align front end (039)	49	H.P.
23. Align rear wheels (040)	32	H.P.
24. R & R turn signal switch (041)	80	H.P.
25. R & R ignition switch rack (042)	72	H.P.
26. R & R steering wheel (043)	82	H.P.
27. R & R Mast Jacket (044)	47	H.P.
28. Set center line steering	*	H.P.
29. Check SAI (steering axis inclination)	*	H.P.
30. R & R tilt wheel & telescopic	*	H.P.
31. R & R power steering seals	*	H.P.
32. R & R 4 way switch	*	
33. Rebuild steering column	*	
34. R & R steering column	*	H.P.
35. R & R steering column bearings, shift tube and socket	*	H.P.
36. Replace shift detent in column	*	H.P.
37. R & R rack & pinion power steering assembly	*	H.P.

*Task not included in survey

BRAKES	PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)		
BRAKES		
1. Check brake operation (045)	92	H.P.
2. Inspect brake hoses and lines (046)	93	BASIC, H.P.
3. Flush brake system (047)	82	H.P.
4 R & R brake hose (048)	92	H.P.
5. R & R brake line (049)	91	H.P.
6. Adjust brake shoes (050)	93	BASIC, H.P.
7. Free-up parking brake cable and linkage (051)	88	BASIC, H.P.
8. Adjust parking brake linkage (052)	92	BASIC, H.P.
9. R & R parking brake cable and linkage (053)	87	BASIC, H.P.
10. R & R parking brake external band (054)	50	H.P.
11. R & R brake shoes (055)	93	H.P.
12. R & R self-adjusters (056)	92	H.P.
13. R & R wheel cylinder (057)	91	H.P.
14. Rebuild wheel cylinder (058)	82	H.P.
15. Cam grind brake shoe (059)	32	H.P.

16. Grind (turn) brake drum	(060)	70	H.P.
17. Recondition backing plate	(061)	51	H.P.
18. R & R disc brake rotor	(062)	93	H.P.
19. Reface disc brake rotor	(063)	70	H.P.
20. R & R caliper assembly	(064)	92	H.P.
21. Rebuild caliper assembly	(065)	88	H.P.
22. R & R master cylinder	(066)	92	H.P.
23. Rebuild master cylinder	(067)	63	H.P.
24. R & R hydraulic power brake unit	(068)	70	H.P.
25. R & R hydro-brake booster unit	(069)	57	H.P.
26. Bleed brake system	(070)	92	H.P.
27. R & R proportioning meter (combination valve)	(071)	75	H.P.
28. Test brake anti-lock system	(072)	33	H.P.
29. Replace defective components in brake anti-lock system	(073)	32	H.P.
30. Test rotor parallelism		*	H.P.
31. Test rotor run-out		*	H.P.
32. Torque wheel lug nuts		*	H.P.
33. Check and service fluid level		*	BASIC, H.P.

*Task not included in survey

HEATING & AIR CONDITIONING AND COOLING SYSTEM		PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)			
HEATING AND AIR CONDITIONING			
1. Inspect control cables	(074)	84	H.P.
2. Test electrical control circuits	(075)	88	H.P.
3. R & R compressor belts	(076)	88	BASIC, H.P.
4. Test vacuum components	(077)	78	H.P.
5. R & R vacuum components	(078)	79	H.P.
6. Test air conditioning thermal switch	(079)	79	H.P.
7. Test blower motor	(080)	88	H.P.
8. R & R blower motor	(081)	88	H.P.
9. Test thermostatic clutch switch	(082)	80	H.P.
10. R & R thermostatic clutch switch	(083)	78	H.P.
11. Inspect air conditioning magnetic clutch switch	(084)	79	H.P.
12. R & R air conditioning magnetic clutch assembly (piston type)	(085)	71	H.P.
13. Inspect clutch and pulley assembly	(086)	83	H.P.
14. R & R clutch and hub assembly (rotary type)	(087)	68	H.P.

15. Test air conditioner charge	(088)	82	H.P.
16. Charge system using pound cans	(089)	76	H.P.
17. Charge system using bulk source	(090)	54	H.P.
18. Perform leak test with halide torch	(091)	51	H.P.
19. Perform leak test with electronic tester	(092)	53	H.P.
20. R & R refrigerant lines	(093)	75	H.P.
21. Fabricate refrigerant lines	(094)	50	H.P.
22. R & R compressor seals	(095)	80	H.P.
23. Check compressor oil level	(096)	82	H.P.
24. Inspect dryer	(097)	79	H.P.
25. R & R dryer in air conditioning unit	(098)	86	H.P.
26. R & R condensor in air conditioning unit	(099)	70	H.P.
27. R & R evaporator	(100)	67	H.P.
28. R & R measured orifice valve (expansion valve)	(101)	68	H.P.
29. Test throttle-suctioning valve	(102)	53	H.P.
30. R & R throttle - suctioning valve	(103)	54	H.P.
31. Test compressor reed plates	(104)	42	H.P.
32. R & R compressor reed plates	(105)	42	H.P.
33. R & R compressor	(106)	72	H.P.
34. Rebuild rotary compressor (swash-plate)	(107)	22	
35. R & R heater core	(108)	83	H.P.
36. Install air conditioner system	(109)	50	
37. R & R low pressure cut out switch		*	H.P.
38. R & R high pressure cut out switch		*	H.P.

*Task not included in survey

COOLING SYSTEM

1. Determine cause of overheating	(110)	91	H.P.
2. Test thermal sensing switch	(111)	71	H.P.
3. R & R thermal sensing switch	(112)	76	H.P.
4. R & R drive belts	(113)	91	BASIC, H.P.
5. Test coolant freezing point	(114)	88	BASIC, H.P.
6. Install antifreeze	(115)	91	BASIC, H.P.
7. Inspect water hoses	(116)	91	BASIC, H.P.
8. Check variable speed fan clutch	(117)	84	H.P.
9. R & R variable speed fan clutch	(118)	84	H.P.
10. R & R electric cooling fan motor		*	H.P.
11. Chemically clean cooling system	(120)	74	H.P.
12. R & R thermostat	(121)	89	H.P.
13. Test thermostat	(122)	79	H.P.
14. Test coolant pressure caps	(123)	89	H.P.
15. Pressure test cooling system	(124)	88	H.P.
16. R & R heater hoses	(125)	89	BASIC, H.P.
17. R & R radiator hoses	(126)	91	BASIC, H.P.
18. R & R radiator	(127)	88	BASIC, H.P.
19. Rebuild blower assembly on air-cooled engines	(128)	17	H.P.
20. R & R heater cores		*	H.P.
21. R & R water pump		*	H.P.

*Task not included in survey

ENGINE TUNE-UP, EMISSION, AND EXHAUST		PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)			
IGNITION SYSTEM			
1. Test ignition system using engine analyzer	(129)	88	H.P.
2. Test point dwell	(130)	96	H.P.
3. R & R distributor cap	(131)	96	H.P.
4. R & R distributor rotor	(132)	96	H.P.
5. Inspect distributor for worn parts	(133)	95	H.P.
6. R & R points	(134)	95	H.P.
7. R & R condensor	(135)	95	H.P.
8. Test condensor	(136)	72	H.P.
9. R & R distributor	(137)	95	H.P.
10. Rebuild distributor	(138)	70	H.P.
11. Test control unit (electronic)	(139)	84	H.P.
12. R & R control unit (electronic)	(140)	91	H.P.
13. Test pickup coil (electronic)	(141)	92	H.P.
14. R & R pickup coil (electronic)	(142)	92	H.P.
15. Test automatic spark advance mechanism	(143)	88	H.P.
16. R & R automatic spark advance mechanism	(144)	87	H.P.
17. Adjust point dwell	(145)	93	H.P.

18. Test ignition timing (146)	95	H.P.
19. Adjust ignition timing (147)	96	H.P.
20. Test ignition coil (148)	91	H.P.
21. Test primary circuit resistance (149)	86	H.P.
22. Test secondary circuit continuity (150)	88	H.P.
23. Test spark plug wires resistance (151)	93	H.P.
24. R & R spark plug wires (152)	96	BASIC, H.P.
25. R & R spark plugs (153)	96	BASIC, H.P.
26. Clean spark plugs (154)	79	BASIC, H.P.
27. Gap spark plugs (155)	93	BASIC, H.P.
28. Test glow plug electrical system	*	H.P.
29. Test glow plug	*	H.P.
30. R & R glow plug	*	H.P.

* Task not included in survey

FUEL SYSTEM			
1. Test carburetor adjustment using combustion analyzer	(156)	53	
2. Test carburetor adjustment using infra-red tester	(157)	52	H.P.
3. Test carburetor adjustment using propane enrichment apparatus	(158)	37	H.P.
4. Adjust carburetor idle mixture	(159)	95	H.P.
5. Adjust anti-stall device	(160)	84	H.P.
6. Inspect carburetor linkage for binding and worn parts	(161)	96	H.P.
7. Check carburetor for vacuum leaks	(162)	96	H.P.
8. R & R carburetor air cleaner	(163)	96	H.P.
9. Check carburetor air cleaner element	(164)	96	BASIC, H.P.
10. Clean carburetor air cleaner element	(165)	88	H.P.
11. Clean automatic choke	(166)	95	H.P.
12. Adjust automatic choke	(167)	92	H.P.
13. Free up manifold heat riser valve	(168)	83	H.P.
14. R & R manifold heat riser valve	(169)	76	H.P.
15. Clean heat riser passages	(170)	72	H.P.
16. Adjust float	(171)	89	H.P.
17. Adjust carburetor metering rods	(172)	80	H.P.
18. R & R carburetor metering jets	(173)	83	H.P.
19. R & R carburetor	(174)	95	H.P.
20. Rebuild carburetor	(175)	91	H.P.
21. R & R fuel filter unit	(176)	96	BASIC, H.P.
22. Test fuel pump	(177)	95	H.P.

23. R & R fuel pump (178)	95	H.P.
24. Test fuel injection system (179)	32	H.P.
25. R & R electrical fuel injection computer (180)	22	H.P.
26. Test wiring harness of electronic fuel injection system (181)	21	H.P.
27. R & R wiring harness of electronic fuel injection system (182)	20	H.P.
28. R & R fuel injection nozzle (183)	30	H.P.
29. Rebuild fuel injection nozzle (184)	1	
30. R & R fuel injection pump (185)	29	H.P.
31. Rebuild fuel injection pump (186)	5	
32. Check waste gate adjustment (187)	28	H.P.
33. Adjust waste gate adjustment (188)	26	H.P.
34. R & R turbocharger (189)	26	H.P.
35. Rebuild turbocharger (190)	2	
36. R & R fuel lines (191)	91	H.P.
37. R & R gas tank (192)	89	H.P.
38. R & R fuel level sending unit (193)	87	H.P.
39. Test electronic fuel mixture control system	*	H.P.
40. Time diesel engine injection pump	*	H.P.
41. R & R injector (diesel)	*	H.P.
42. R & R injector line (diesel)	*	H.P.
43. Test injector spray pattern (diesel)	*	H.P.
44. Test calibration of injector lines (diesel)	*	H.P.
45. Bleed fuel system	*	H.P.
46. Clean fuel filter	*	BASIC, H.P.

*Task not included in survey

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EMMISSIONS CONTROL SYSTEM

1. Test emission control system using propane enrichment apparatus (194)	32	H.P.
2. R & R vacuum hoses (195)	96	H.P.
3. Test P.C.V. System (196)	92	H.P.
4. R & R P.C.V. valve (197)	93	H.P.
5. R & R P.C.V. valve hose(s) (198)	95	H.P.
6. Test vacuum advance/retard device (199)	95	H.P.
7. R & R vacuum advance/retard device (200)	89	H.P.
8. Test electrical advance/retard device (201)	70	H.P.
9 Check idle solenoid (202)	95	H.P.
10. R & R idle solenoid (203)	89	H.P.
11. R & R deceleration valve (204)	83	H.P.
12. Test thermostatic air cleaner (205)	84	H.P.
13. Adjust thermostatic air cleaner (206)	61	H.P.
14. R & R thermostatic air cleaner (207)	80	H.P.
15. Check exhaust gas recirculation valve operation (208)	91	H.P.
16. R & R exhaust gas recirculation valve (209)	91	H.P.
17. Check air injection system (210)	79	H.P.
18. R & R air pump (211)	80	H.P.
19. R & R diverter and anti-backfire valve (212)	79	H.P.
20. Test fuel evaporation system (213)	68	H.P.
21. R & R closed system charcoal canister filter (214)	82	H.P.

22. Test back pressure of exhaust system	(215)	68	H.P.
23. R & R catalytic converter	(216)	68	H.P.
24. R & R beads in catalytic converter	(217)	26	
25. Test exhaust oxygen sensor		*	H.P.
26. R & R exhaust oxygen sensor		*	H.P.
27. Test electronic fuel mixture control system		*	H.P.

*Task not included in survey

EXHAUST SYSTEM			
1. Check exhaust system for leaks and restrictions	(218)	91	H.P.
2. R & R exhaust system supports	(219)	86	BASIC, H.P.
3. R & R convertor beads	(220)	29	
4. R & R catalytic convertor	(221)	67	H.P.
5. R & R muffler	(222)	87	BASIC, H.P.
6. R & R exhaust pipe	(223)	86	BASIC, H.P.
7. R & R tail pipe	(224)	86	BASIC, H.P.
8. R & R exhaust manifold	(225)	86	H.P.

AUTOMATIC TRANSMISSION	PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)		
AUTOMATIC TRANSMISSION		
1. Pressure test transmission in car (226)	38	H.P.
2. Stall test automatic transmission in car (227)	39	H.P.
3. Clean transmission oil strainer (228)	67	H.P.
4. R & R transmission oil filter (229)	71	H.P.
5. Adjust automatic transmission shift linkage (230)	63	H.P.
6. Test vacuum shift modulator (231)	54	H.P.
7. R & R vacuum shift modulator (232)	61	H.P.
8. Adjust bands (233)	49	H.P.
9. R & R transmission governor (234)	42	H.P.
10. Clean transmission governor (235)	38	H.P.
11. Clean transmission valve body (236)	39	H.P.
12. R & R automatic transmission with convertor assembly (237)	47	H.P.
13. R & R automatic transmission without convertor assembly (238)	28	H.P.

14. Rebuild automatic transmission assembly	(239)	30	H.P.
15. Measure convertor turbine end play	(240)	18	H.P.
16. Air pressure test transmission on bench	(241)	29	H.P.
17. Pressure flush convertor assembly	(242)	7	H.P.
18. Pressure flush automatic transmission cooler assembly	(243)	16	H.P.
19. R & R torque convertor	(244)	47	H.P.
20. R & R extension housing seal and bushing	(245)	53	H.P.
21. Splice cooler lines	(246)	57	H.P.
22. Replenish transmission oil		*	BASIC, H.P.
23. Test electrical controls of automatic clutch converter		*	H.P.

*Task not included in survey

ELECTRICAL SYSTEM	PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)		
ELECTRICAL SYSTEM		
1. Inspect battery electrolyte level (247)	92	BASIC, H.P.
2. Test battery with hydrometer (248)	89	BASIC, H.P.
3. Test battery for surface leakage (249)	89	BASIC, H.P.
4. Test battery voltage (250)	94	BASIC, H.P.
5. Test battery for capacity (load) (251)	92	H.P.
6. Clean battery, posts, and cable connections (252)	93	BASIC, H.P.
7. Measure ground system resistance (253)	71	H.P.
8. R & R battery cables (254)	93	BASIC, H.P.
9. Charge battery (255)	95	BASIC, H.P.
10. Test charging system output (256)	95	H.P.
11. Test generator output (257)	78	
12. Test alternator output (258)	95	H.P.
13. R & R generator or alternator (259)	95	H.P.
14. Rebuild generator (260)	46	
15. Rebuild alternator (261)	68	H.P.
16. R & R charging system regulator (262)	95	H.P.

17. Test starter control circuit	(263)	84	H.P.
18. Test starter current draw	(264)	93	H.P.
19. R & R starter solenoid	(265)	95	H.P.
20. Test electrical motors	(266)	75	H.P.
21. R & R starter	(267)	95	H.P.
22. Rebuild starter	(268)	67	H.P.
23. Test switches	(269)	91	H.P.
24. R & R switches	(270)	92	H.P.
25. Test fuses	(271)	95	BASIC, H.P.
26. R & R fuses	(272)	95	BASIC, H.P.
27. Test circuit breakers	(273)	86	BASIC, H.P.
28. R & R circuit breakers	(274)	87	BASIC, H.P.
29. R & R fuse block assembly	(275)	70	H.P.
30. Inspect lighting system for faulty bulbs	(276)	93	BASIC, H.P.
31. R & R light bulbs	(277)	92	BASIC, H.P.
32. R & R sockets	(278)	87	H.P.
33. Adjust headlights	(279)	76	H.P.
34. Test parking light circuit	(280)	87	H.P.
35. R & R dimmer switch	(281)	88	H.P.
36. Test turn signal circuit	(282)	89	H.P.
37. R & R turn signal switch	(283)	88	H.P.
38. Adjust backup light switch	(284)	83	H.P.
39. R & R backup light switch	(285)	86	H.P.
40. Adjust stop light switch	(286)	89	H.P.

41. R & R stop light switch	(287)	89	H.P.
42. Check horn circuit	(288)	93	H.P.
43. Test horn relay	(289)	89	H.P.
44. R & R horn relay	(290)	91	BASIC, H.P.
45. Test windshield wiper circuit	(291)	91	H.P.
46. R & R windshield wiper motor	(292)	91	H.P.
47. R & R windshield washer motor	(293)	89	H.P.
48. Test constant voltage regulator	(294)	78	H.P.
49. R & R constant voltage regulator	(295)	80	H.P.
50. Test instrument gauges	(296)	80	H.P.
51. R & R instrument gauges	(297)	80	H.P.
52. Test sending units	(298)	87	H.P.
53. R & R sending units	(299)	91	H.P.
54. Test warning lamps	(300)	82	BASIC, H.P.
55. R & R warning lamps	(301)	84	BASIC, H.P.
56. Test instrument gauges	(302)	79	H.P.
57. R & R instrument gauges	(303)	78	H.P.
58. Adjust voltage regulator output		*	
59. R & R horn		*	H.P.

*Task not included in survey

ELECTRICAL ACCESSORIES			
1. Test cruise control unit	(304)	68	H.P.
2. R & R cruise control components	(305)	68	H.P.
3. Test automatic alarm system	(306)	30	BASIC, H.P.
4. R & R automatic alarm system components	(307)	30	H.P.
5. Test radio power circuit	(308)	67	H.P.
6. Inspect radio speaker	(309)	68	H.P.
7. R & R radio speaker	(310)	68	H.P.
8. Test radio antenna	(311)	66	H.P.
9. R & R radio antenna	(312)	74	H.P.
10. Trim radio antenna	(313)	64	H.P.
11. R & R power antenna motor	(314)	66	H.P.
12. R & R power window motors	(315)	70	H.P.
13. R & R power seat motors	(316)	57	H.P.
14. Test cigarette lighter circuit	(317)	79	BASIC, H.P.
15. R & R cigarette lighter receptacle	(318)	78	H.P.

MANUAL TRANSMISSION AND REAR AXLE		PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)			
MANUAL TRANSMISSION			
1. Adjust shift linkage	(319)	76	H.P.
2. Adjust manual clutch	(320)	78	H.P.
3. Adjust hydraulic clutch free travel	(321)	70	H.P.
4. R & R extension housing seal and bushing	(322)	62	H.P.
5. R & R manual transmission	(323)	76	H.P.
6. Rebuild manual transmission	(324)	64	H.P.
7. R & R pressure plate assembly	(325)	78	H.P.
8. R & R clutch release bearing	(326)	79	H.P.
9. R & R clutch release fork	(327)	76	H.P.
10. R & R pilot bearing	(328)	78	H.P.
11. R & R hydraulic clutch slave cylinder	(329)	61	H.P.
12. Rebuild hydraulic clutch slave cylinder	(330)	55	H.P.
13. R & R hydraulic clutch master cylinder	(331)	59	H.P.

14. Rebuild hydraulic clutch master cylinder	(332)	54	H.P.
15. Measure flywheel runout	(333)	45	H.P.
16. Replace flywheel	(334)	68	H.P.
17. Measure bellhousing runout	(335)	25	H.P.
18. R & R 4WD transfer case		*	
19. Rebuild 4WD transfer case		*	
20. Check fluid levels		*	BASIC, H.P.

* Task not included in survey

DRIVE LINES

1. Inspect drive line for worn parts	(336)	79	BASIC, H.P.
2. Lubricate universal joint	(337)	75	BASIC, H.P.
3. R & R universal joint	(338)	78	H.P.
4. R & R trunion joint	(339)	54	H.P.
5. Lubricate speedometer cable	(340)	76	BASIC, H.P.
6. R & R speedometer cable	(341)	76	BASIC, H.P.
7. R & R speedometer drive gear	(342)	72	H.P.
8. R & R axle seal	(343)	79	H.P.
9. R & R axle bearing	(344)	78	H.P.
10. Balance drive shaft (in car)	(345)	20	H.P.
11. R & R transmission mount	(346)	74	H.P.
12. Check drive line angles	(347)	41	H.P.
13. R & R differential assembly (integral)	(348)	70	H.P.

14. R & R differential assembly (removable) (349)	66	H.P.
15. Rebuild differential assembly (integral) (350)	53	H.P.
16. Rebuild differential assembly (removable) (351)	53	H.P.
17. R & R trans-axle assembly (352)	56	H.P.
18. Rebuild trans-axle assembly (353)	47	H.P.
19. R & R front-drive axle assemblies (354)	49	H.P.
20. Rebuild 4 wheel drive locking hubs (355)	53	H.P.
21. R & R pinion seal	*	H.P.
22. Rebuild power take off	*	
23. R & R drive shaft center support bearings	*	H.P.
24. Rebuild constant velocity universal joints	*	H.P.
25. R & R constant velocity joints	*	H.P.
26. Repack constant velocity joints	*	H.P.
27. R & R constant velocity boots	*	H.P.

* Task not included in survey

ENGINE REPAIR		PERCENT OF MECHANICS THAT DO THE TASK	LEVEL
TASK(S)			
ENGINE MECHANICAL DIAGNOSIS			
1. Test cylinder balance using engine analyzer	(356)	79	H.P.
2. Test cylinder leakage	(357)	70	H.P.
3. Inspect engine for vacuum leaks	(358)	89	H.P.
4. Inspect engine for oil leaks	(359)	100	BASIC, H.P.
5. Inspect to determine cause of overheating	(360)	88	H.P.
6. Inspect cooling system for source of coolant loss	(361)	88	BASIC, H.P.
7. Inspect valve train and guides for cause of malfunctions	(362)	76	H.P.
8. Inspect engine for source of mechanical engine noise	(363)	88	H.P.

ENGINE BLOCK

1. Steam clean engine (364)	50	BASIC, H.P.
2. R & R core plugs (365)	76	H.P.
3. Test oil pump pressure (366)	74	H.P.
4. Test oil pressure relief valve (367)	61	H.P.
5. R & R motor mounts (368)	88	H.P.
6. R & R engine assembly (369)	75	H.P.
7. R & R oil pan (370)	80	H.P.
8. R & R rod bearing(s) (371)	68	H.P.
9. R & R piston(s) (372)	68	H.P.
10. R & R crank shaft (373)	68	H.P.
11. Inspect block for warp (374)	61	H.P.
12. Bore cylinders	*	
13. Hone cylinders	*	
14. Install cam bearings	*	H.P.
15. Assemble short block	*	H.P.

*Task not included in survey

CYLINDER HEAD AND VALVE TRAIN

1. Inspect for rocker arm lubrication (375)	80	H.P.
2. R & R intake manifold (376)	80	H.P.
3. Test valve lifters (377)	60	H.P.
4. R & R cylinder head (378)	78	H.P.
5. Inspect cylinder head for warp - cracks (379)	65	H.P.

6. Rebuild cylinder head	(380)	50	H.P.
7. R & R harmonic balancer	(381)	75	H.P.
8. R & R timing chain or belt	(382)	84	H.P.
9. R & R timing gear	(383)	84	H.P.
10. R & R camshaft	(384)	70	H.P.
11. R & R camshart bearings	(385)	47	
12. Adjust hydraulic valve lifters	(386)	70	H.P.
13. Adjust mechanical valve lifters	(387)	70	H.P.

The tasks with an asterisk (*) were not included in the original survey, but should be considered during the updating or development of an automobile mechanic/technician training program curriculum. In some cases, the tasks were simply missed in the original task list development. In other cases, they are new or emerging tasks that deal with changing technology. These emerging tasks need to be covered during the training, at least from a theory and descriptive basis, so the students will be aware of the existence of the technology prior to employment.

Tasks in this added section should be considered if entry level positions in local dealerships exist for "new car prep". (These tasks were not included in the survey)

"NEW CAR PREP"

Adjust door hinges & striker plates

Locate water leaks

Seal water leaks

Locate duct leaks

Seal duct leaks

Locate rattles and noises

Install door moldings

R & R window regulators

Adjust window regulators

Install air shocks

Install C.B. and radios

Touch up paint

Lubricate hinges

GUIDE FOR A

BASIC AUTOMOTIVE COURSE

(Approximately 200 hours)

This basic course is designed to provide training in safety, support and theory, with competency in performance of each of the specific tasks as the overall goal. Upon successful completion of this course, the student should be prepared for "entry level" employment in the automotive service industry.

The material covered in this course provides a program exit point identified in the Dictionary of Occupational Titles (D.O.T.) as Automotive Service Station Attendant, D.O.T. Code Number 915.467-010 (4th edition). Once again, this code and title information is included for reporting purposes. A positive title such as "Basic Automotive" is more appropriate, and will not give the program a "grease-monkey" image.

Completion of the material in the basic course will also provide a basic background for further work in a specialty area(s) outlined in Figure 1. These include areas such as Heating and Air Conditioning Specialist (D.O.T. Code #620.281-010), Automatic Transmission Specialist (D.O.T. Code #620.281-062) or any of the specialty fields (singularly or in combinations) identified on page 4 of this guide.

Automobile mechanic/technician training program(s) can be structured in various configurations. This basic course, however, will provide the required background for any future course the student may pursue.

It is recommended that the basic course be structured and identified for reporting purposes in the aforementioned manner.If this structure is followed, students will receive training on basics which will give them salable skills. If they want further training, they will be prepared for various options which may be available.

The following material (pp. 43-46) outlines a Basic Automotive Course.

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SELECTED TASKS FOR A BASIC AUTOMOTIVE COURSE

FRONT END

Inspect suspension system for worn parts

R & R shock absorbers

Check and service fluid levels

Inspect tires and wheels for damage and irregular wear

Lubricate steering gear and linkage

Test tire pressure

Rotate tires

BRAKES

Check and service fluid level

Inspect brake hoses and lines

Free-up parking brake linkage

Adjust parking brake linkage

R & R parking brake cable and linkage

Adjust brake shoes

HEATING, AIR CONDITIONING, AND COOLING

R & R drive belts and adjust tension

Test coolent freezing point

Install anti-freeze

Inspect water hoses

Test coolent pressure caps

R & R heater hoses

R & R radiator hoses

R & R radiator

ENGINE TUNE-UP

Check carburetor air cleaner element

R & R fuel filter unit

R & R exhaust system supports

R & R muffler

R & R exhaust pipe

R & R tail pipe

R & R spark plug wires

R & R spark plugs

Clean spark plugs

Gap spark plugs

AUTOMATIC TRANSMISSION

Check and replenish transmission oil

ELECTRICAL SYSTEM

Inspect battery electrolyte level (where appropriate)

Test battery with hydrometer (where appropriate)

Test battery for surface leakage

Test battery voltage

Clean battery, posts, cable connections

R & R battery cables

Charge battery

R & R alternator

Test fuses

R & R fuses

Test circuit breakers

R & R circuit breakers

Inspect lighting system for faulty bulbs

R & R light bulbs

Test warning lamps

R & R warning lamps

Test automatic alarm system

MANUAL TRANSMISSION AND REAR AXLE

Check and replinish fluid level

Inspect drive line for worn parts

Lubricate universal joints

R & R speedometer cable

Lubricate speedometer cable

ENGINE REPAIR

Inspect engine for leaks

Steam or detergent clean engine

Disassemble, identify components and function, reassemble and run a one cylinder air cooled engine (Wisconsin, Techumsah, Briggs & Stratton, or comparable). NOTE: This will provide hands on experience and develop a working awarness of internal combustion engine parts and their relation.

NEW CAR PREP

In many areas, New Car Dealers have positions open for "New Car Prep" or "Dealer Prep." If this is true in your area, then the tasks on page 38 may be added to the basic course. The students who wish to do so will then be able to finance their own future training, and return to school on a part-time basis to continue their training.

SUPPORT AND THEORY

The basic course must include the related basic operational theory in each vehicle sub-system, (front end, brakes, etc.) and also cover system interaction during operation. Additional areas to be covered in this basic course include the following:

SHOP SAFETY: Safety instruction will include general safety and emphasize safety requirements of the school shop in which the student will be working. Each student must take a safety test upon completion of the initial safety instruction and receive a perfect score prior to any hands-on shop work.

HAND TOOLS: Each student must identify and properly use "tools of the trade," with emphasis on those in the Phase I set.

POWER TOOLS: Each student must demonstrate proper use of grinders, drills, impact equipment and other non-student owned (basic course) tools.

FASTENERS: Each student must demonstrate competency in size and tensile strength identification, identify fastener applications, and identify the need for correct fastener torque.

SERVICE MANUALS: Each student must demonstrate the ability to use manufacturers procedure and specification publications.

WORK ORDERS: Each student must demonstrate the ability to complete a customer work order.

FINANCIAL: Each student must demonstrate the ability to make change and complete a credit card charge form.

TELEPHONE: Each student must demonstrate the ability to communicate telephone messages.

TOOLS AND EQUIPMENT

Local employment opportunities dictate the program structure of the automotive department. The availability of funds for program operation also impacts on program structure. This section was developed recognizing that in the majority of programs, all of the tasks and specialty areas cannot be covered. The basic philosophy is this: For the tasks which are covered, the training should be as thorough as possible.

This section of the guide covers the basic tools and equipment the shop and student should have for training in any given specialty area. Obviously, many tools and much equipment are the same for some or all of the specialty areas. Some equipment is specialized, however, and must be available in the shop to provide quality training. No specific brand names are identified because this will vary in each local situation.

The student hand tool lists (pp 47-52) cover all areas, and indicate the tools a student will need to own to be employed and successful in each or all of the specialty areas. A majority (90%) of employers recently surveyed (AMTEP Final Report, 1981) indicated that a potential employee needed his/her own basic hand tool set to be employed as an entry level automobile mechanic/technician.

STUDENT HAND TOOL SET(S)

BASIC TOOL SET

Adjustable Wrench - 10"

Battery Tools - Battery Nut Pliers
    Battery Terminal Clamp Puller
    Battery Post Cleaner

Belt Tension Guage

Blow Gun- Rubber Tip (OSHA approved)

Brake Spoon

Chisel - 5/8" Cold Chisel
    5/16" Cape Chisel

Combination Wrenches - 7/16"- 1", 7mm - 19mm

Creeper

Filter Wrench - Oil and Gas

Files - 10" Coarse, 6" Fine

Hack Saw

Hammers - Medium Ball Peen
    Soft Face

Magnetic Pickup Tool

Mechanics Steel Ruler

Oil Can - Pump type

Pliers - Needle nose
    All purpose
    Hose clamp
    Side cutters
    Vise grip
    Slip joint (water pump)

- Punches - 1/4" and 1/8" Pin Punch, 3/8" Taper Punch, 3" Center Punch
- Safety Glasses
- Scraper - 1 1/2" Wide
- Screwdriver (Common) - Stubby, 6", 12", 9" offset
  - (Phillips) - Stubby #1 and #2
    - 6" #1 and #2
    - 12" #3
    - Offset #2
  - (Torx) T-15, T-20, T-25, T-30
- Screw Pitch Gauge - N.F., N.C., Metric
- Screw Starter (Standard and Phillips)
- Socket Set 3/8" Drive - 5/16" thru 3/4" Standard (6 pt)
  - 3/8" thru 3/4" Deep (6 pt)
  - 6mm to 19mm
  - 9mm to 19mm Deep
  - Universal joint
  - Ratchet handle
  - Short, medium, and long extension
  - Spark Plug Sockets - 5/8" and 13/16"
  - Speed Handle
  - Breaker Bar
- Spark Plug Gap Gauge
- Spark Plug Wire Remover
- Tape Measure
- Thread Chaser Set
- Tire Pressure Gauge
- Tool Box
- Torque Wrench 3/8" Drive - 5-75 ft. lbs.— 5-100 Nm
- Wire Brush

ADDITIONAL TOOLS

The tools on this list are used in the specialty areas. Program personnel must determine which tools are needed in each area.

Adjustable Wrench - 6"

Allen Wrench - 2mm thru 7mm, .050" thru 3/8"

Box End Wrench set - 3/8" - 1 1/8", 8mm - 18mm
3/8" - 3/4" Offset]
optional
7mm - 15mm Offset]

Brake Tools - Brake Cylinder Hone
Brake Cylinder Clamps
Brake Spring Installer
Brake Plier
Brake Rotor Gauge

Chisels - 3/8", 3/4" Cold Chisel

Compression Tester

Continuity Test Light

Dial Indicator Set

Digital Electronic Volt Meter

Drag Link & Shock Tool

Drill - 3/8" Variable Speed, Reversable

Drill Bits - 1/16"- 3/8"

Easy-Outs - 1 Set

Engine Tools - Cylinder Hone
    Piston Ring Expander
    Piston Ring Compressor
    Piston Ring Grove Cleaner
    Ridge Remover
    Telescopic Gauge
    Valve Spring Compressor

Feeler Gauges - .002" - .040" set, .006mm - .070mm set

Files and Handles - 4", 10" and 12" fine
    6" and 12" coarse
    6" and 12" half round

Flare Nut Wrench Set - 3/8" - 11/16", 7mm - 17mm

Hammers - Heavy Ball Peen, 24 oz, Brass, Hand Sledge, 5 lb

Ignition Wrench - Metric Set, Standard Set

Impact Ratchet Wrench - 3/8" Drive with Socket Set--Standard & Metric

Impact Wrench - 1/2" Drive with Sockets

Micrometers - 0-1", 1"-2" and 2-3"
    0-25mm, 25-50mm, and 50-75mm

Open End Wrench Set - 5/16" - 7/8", 8mm - 19mm

Pitman Army Pry Bar

Pliers - Snap Ring
    Wheel Weight

Punches - 5/16", 3/16" Pin, 1/2", 5/8" Tapered, 6" Center Punch

Pry Bar - 16"

Puller - Two Way
    Three Way

Roll-Around Tool Cabinet

Scraper - Carbon Remover

Screwdriver (Clutch Head) 3/16", 5/16", 1/4", 3/8"

Socket Set 1/2" Drive - 10mm - 25mm Standard

10mm - 25mm Deep

7/16" - 1 1/8" Standard

1/2" - 1 1/8" Deep

Ratchet

Speed Handle

Flex Handle (Breaker Bar)

Short, medium and long extension

Socket Set 1/4" Drive - 3/16" - 1/2" Standard

6mm - 12mm

Ratchet

Short and long extension

Soldering Gun

Tach/Dwell Meter

Tap and Die Set - Standard and Metric

Timing Light with Inductive Pickup

Top Tool Chest - 6 Drawer Minimum

Torque Wrench - 1/2" Drive, 0-150 ft/lbs — 0-200 Nm

Tubing Cutter with flaring tool, double flare type

Vacuum/Pressure Guage

SHOP TOOLS AND EQUIPMENT

This section (pp 53-56) covers the tools and equipment a shop should have for training in any given specialty area. Obviously, many of the tools and equipment are the same for some or all of the specialty areas. Some equipment is specialized however, and to provide quality training it must be available in the shop. No specific type or brand names are identified as this is a local option.

NOTE: All shops are assumed to have an air compressor, adequate electrical capacity, fender covers and steel work benches with vises.

FRONT END

.Arbor Press
.Axle Stands
.Bearing Packer,
  hand operated
.Chassis Lubricator System
.Floor Jack(s)- 4 TON
.Hoist(s), Swing Arm Frame
  Contact
.Hydraulic Press - 25 TON
.Oxy-Acetylene Welder
.Parts Cleaning Tank
.Tire Mounting Machine
.Wheel alignment equipment,
  rack or pit type
.Wheel Balancer
    1) On Car Spin Balancer
    2) Off Car, Electronic Type

BRAKES

.Arbor Press
.Axle Stands
.Bearing Packer,
  hand operated
.Bench Grinder
.Brake Bleeder, Pressure
 "Brake Shop", mobile with
  disc attachments
.Dial Indicator
.Floor Jack - 4 TON
 Hoist(s), Swing Arm Frame
  Contact
.Hydraulic Press - 25 TON
.Oxy-Acetylene Welder
.Parts Cleaning Tank
.Puller(s)

HEATING AND AIR CONDITIONING

.Air Conditioner Repair Unit, consisting of pullers, removers, adapters, special feeler gauges, tools, system analyzer, necessary hoses, leak detector, circuit tester, thermometer, ratchet, refrigerant can, dispenser valves, and portable vacuum pump.
.Axle Stands
.Bench Grinder
.Cooling System Tester
.Dial Indicator
.Floor Jack - 4 TON
.Gear Puller(s)
.Hydraulic Press - 25 TON
.Oxy-Acetylene Welder
.Thermostat Tester

TUNE UP

.Arbor Press
.Axle Stands
.Battery Charger
.Battery/Starter Tester
.Bench Grinder
.Dial Indicator Set
.Distributor Tester
.Engine Analyzer with Scope, Etc.
.Floor Jack, 4 TON
.Parts Cleaning Tank
.Puller Set
.Spark Plug Cleaner

AUTOMATIC TRANSMISSON

.Arbor Press
.Axle Stands
.Bench Grinder
.Floor Jack(s) - 4 TON
.Hoist(s), Swing Arm Frame Contact
.Hot Tank
.Hydraulic Press - 25 TON
.Parts Cleaning Tank
.Portable Crane - 2 TON
.Puller Sets
.Transmisson Jack(s)
.Transmission Holding Fixtures
.Transmission Special Tool Sets

ELECTRICAL SYSTEM

.Arbor Press
.Armature Tester
.Axle Stand(s)
.Battery Charger
.Battery/Starter Tester
.Floor Jack(s)-4 TON
.Grinder
.Hydraulic Press - 25 TON
.Parts Cleaning Tank
.Puller Set
.Volt-Ampere Tester
.Wood (Non-Conductive)
Work Bench

MANUAL TRANSMISSION AND REAR AXLE

- .Arbor Press
- .Arc Welder
- .Axle Stand(s)
- .Bench Grinder
- .Brake Bleeder
- .Dial Indicator Set
- .Floor Jack(s) - 4 TON
- .Hoist(s), Swing Arm Frame Contact
- .Holding Fixtures
- .Hot Tank
- .Hydraulic Press 25 TON
- .Lube Dispenser
- .Oxy-Acetylene Welder
- .Parts Cleaning Tank
- .Portable Crane - 2 TON
- .Puller Sets
- .Steam or Detergent Cleaner
- .Transmission Jack(s)

ENGINE

- .Arbor Press
- .Axle Stand(s)
- .Battery Charger
- .Bench Grinder(s)
- .Engine Analyzer
- .Floor Jack(s)
- .Gear Puller Set
- .Hot Tank
- .Hydraulic Press - 25 TON
- .Oxy-Acetylene Welder
- .Parts Cleaner
- .Portable Crane - 2 TON
- .Steam or Detergent Cleaner
- ."Valve Shop," including refacer and seat grinder

PERFORMANCE STANDARDS

These Performance Standards were developed for the task list which starts on page 9 of this guide, and they meet this definition of a Performance Standard— "A written specification of the results of acceptable task performance." In other words, if the task is performed the way it should be, this is what should or should not happen. These standards are indicators of what the mechanic, supervisor, customer, student, teacher or others should look for when assessing the competence of task performance.

In many of the R & R tasks, the standard deals with installing according to manufacturer's procedure, since this is CRITICAL for competent task performance. Each model/manufacturer has specific procedures for these tasks, and they may differ significantly. An operation sheet or check list with critical points or activities identified may need to be developed. This will provide a method of checking procedures during the test or before the unit is operated.

For many of the test, check, inspect, or measure tasks, the standard is "detecting a deviation from manufacturer's specifications." In this type of task, the instructor must develop the training so that upon the completion of instruction (at test time), the student will be able to:

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1) Determine the manufacturer's specification for that specific vehicle, 2) Determine if the unit or sub-system that task is concerned with is within manufacturer's specifications. In other words, be able to troubleshoot a problem.

In the rebuild tasks, a checklist will need to be developed if certain steps in the task are critical, and cannot be checked after the task is completed. This checklist will vary with different manufacturer's vehicles and equipment. The checklist should include assembly steps, torque specifications and other critical activities.

"How to do it" (a task) is not part of the performance standard. The question that this material attempts to answer is, "What should the test developer (instructor) look for as an indicator that the testee (student) is competent in performing a task?" The actual design of the performance test is a local responsibility since the vehicles, tools, equipment and facilities will vary from program to program. In many cases a checklist, perhaps quite complex, will be required to determine competency.

The performance standards should be given to the student prior to instruction or performance of the task. The standard is also the objective of proper performance of the task, and lets the student know specifically what he/she is working toward, and the criteria that will be used to determine competency.

ASSUMPTIONS

In any R & R (Remove and Replace) task -

The replacement unit is O.K. It may be rebuilt or new but will require no troubleshooting.

In any rebuild task -

The mechanic who does the rebuilding may or may not be the mechanic who R & R's the part.

In any test, check, inspect, or measure task -

The mechanic that tests or checks may or may not be the one who rebuilds or R & R's the part.

DEFINITIONS

CHECK - To verify by visual examination or comparison.

TEST - Task which uses meters or gauges.

MEASURE - Task to determine dimensions.

INSPECT - To visually examine carefully, verify.

NOTE:

For many of the test, check, inspect, or measure tasks, the performance standard is -- "detecting a deviation from manufacturer's specifications." In this type of task, the instructor must develop the training so that upon the completion of instruction (at test time), the student will be able to: 1) Determine the manufacturer's specification for that specific vehicle, 2) Determine if the unit or sub-system that task is concerned with is within the manufacturer's specifications. In other words, be able to troubleshoot (diagnose) a problem.

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FRONT END SPECIALIST

SUSPENSION

1. Inspect suspension system for worn parts

   STANDARD: All parts worn beyond manufacturer's specifications must be detected.

2. R & R suspension bushings

   STANDARD: Bushings must be installed in accordance with manufacturer's specifications without "bushing windup."

3. Inspect tires and wheels for damage and irregular wear

   STANDARD: All damage and irregular wear must be detected.

4. R & R front wheel bearings (drum brakes)

   STANDARD: Spindle nut must be torqued to manufacturer's specifications, grease changed according to manufacturer's specifications, and a new cotter pin installed.

5. R & R front wheel bearings (disc brakes)

   STANDARD: Same as Standard 4.

6. Repack wheel bearings

   STANDARD: Clean grease must be visible on the inner and outer shell of the bearing.

7. R & R shock absorbers

   STANDARD: All attachment hardware must be torqued to manufacturer's specifications and all bushings must be compressed.

8. R & R control arms

   STANDARD: All attachment hardware must be torqued to manufacturer's specifications, the rubber bushings must be centered in the control arm beams and compressed equally on both sides.

9. R & R ball joints

STANDARD: Installation must follow manufacturer's specifications.

10. R & R torsion bar

STANDARD: Ride height must be within manufacturer's specifications.

11. R & R coil springs

STANDARD: The upper and lower ends of the coil must be seated in the notches, all attachment hardware must be torqued to manufacturer's specifications and ride height must be within manufacturer's specifications.

12. R & R king pins

STANDARD: Front wheels must rotate through full arc without binding, no bushing side play can be felt.

13. R & R spindle

STANDARD: All attachment hardware must be torqued to manufacturer's specifications.

14. R & R McPherson strut assembly

STANDARD: All attachment hardware must be torqued to manufacturer's specifications, ride height must be within manufacturer's specifications, wheels must rotate through full arc without binding.

15. Rebuild McPherson strut assembly

STANDARD: Same as Standard 14

16. R & R trunion pin assembly

STANDARD: All attachment hardware must be torqued to manufacturer's specifications, any deviation from manufacturer's wheel alignment specifications must be detected.

17. R & R leaf spring assembly

STANDARD: All attachment hardware must be torqued to manufacturer's specifications, spring center bolt must be seated in center bolt hole.

STEERING SYSTEM

1. Inspect steering gear and linkage for worn parts

STANDARD: All parts worn beyond manufacturer's specifications must be detected.

2. Check and service fluid level

STANDARD: All fluid levels less than operating level must be detected and filled to operating level.

3. Lubricate steering gear and linkage

STANDARD: Lubrication procedures must follow manufacturer's specifications for item being lubricated.

4. Test tire pressure

STANDARD: Tire pressures deviating from manufacturer's specifications for the vehicle and tire size must be detected.

5. Rotate Tires

   STANDARD: Tires must be rotated and lug nuts must be torqued according to manufacturer's specifications.

6. Balance wheel and tire assembly

   STANDARD: Minimum or no vibration (caused by wheel and tire assembly) will be felt at road speed.

7. Adust steering sector

   STANDARD: Steering sector "play" must be within manufacturer's specifications.

8. R & R steering linkage components

   STANDARD: All attachment hardware must be torqued to manufacturer's specifications.

9. R & R manual steering sector

   STANDARD: Steering effort will be even from lock to lock (except at the over center position), all attachment hardware must be torqued to manufacturer's specifications.

10. R & R steering damper

    STANDARD: Steering wheel will not "kick-back" when vehicle crosses rough pavement or RR tracks.

11. R & R power steering hoses

    STANDARD: Hose connections must not leak, must not be kinked and must be routed according to manufacturer's specifications.

12. R & R belt/belts and set tension

    STANDARD: Belt tension must be set at manufacturer's specifications.

13. R & R power steering cylinder

    STANDARD: No leaks will be observed at hose connections, all attachment hardware must be torqued to manufacturer's specifications.

14. Rebuild power steering cylinder

    STANDARD: Steering effort must be within manufacturer's specifications, no leaks will be observed at hose connections, all attachment hardware must be torqued to manufacturer's specifications.

15. R & R power steering control valve assembly

    STANDARD: Steering effort must be within manufacturer's specifications, no leaks will be observed at hose connections, all attachment hardware must be torqued to manufacturer's specifications.

16. Rebuild power steering control valve assembly

    STANDARD: Same as Standard 15

17. R & R power steering pump

    STANDARD: Same as Standard 15

18. Rebuild power steering pump

    STANDARD: Same as Standard 15

19. Rebuild rack and pinion power steering assembly

    STANDARD: Same as Standard 15

20. Rebuild rack and pinion manual steering assembly

    STANDARD: Steering effort must be even from lock to lock, steering effort must be within manufacturer's specifications, all attachment hardware must be torqued to manufacturer's specifications.

21. Adjust toe-in

STANDARD: Toe-in or toe-out must be within manufacturer's specifications.

22. Align front end

STANDARD: Caster and camber (where adjustable) must be within manufaturer's specifications, vehicle must steer without pulling or wandering at road speeds.

23. Align rear wheels

STANDARD: Rear wheels must track within manufacturer's specifications.

24. R & R turn signal switch

STANDARD: Turn signals must flash when switch is on and cancel after steering wheel is returned to the straight ahead position.

25. R & R ignition switch rack

STANDARD: Engine must start when key is in start position; ignition must not hang up or bind.

26. R & R steering wheel

STANDARD: Steering wheel must be centered when front wheels are straight ahead, steering wheel retaining nut must be torqued to manufacturer's specifications.

27. R & R mast jacket

STANDARD: Steering effort must be even from lock to lock (except in the over center position) with no steering shaft bind.

BRAKE SPECIALIST

BRAKES

1. Check brake operation

   STANDARD: When brakes are applied, vehicle must not pull to right or left, brakes must not lock on any one wheel before other wheels lock and vehicle must stop within manufacturer's specified distance. Brake pedal height outside of manufacturer's specifications must be detected, any brake "bleed-down" must be detected. Any pulsation of brakes must be detected. Any brake pedal free play outside of manufacturer's specification must be detected. Any "mushiness" when brake is depressed must be detected.

2. Inspect brake hoses, lines, and fittings

   STANDARD: Any leaking, kinked, or cracked hoses, lines or fittings must be detected.

3. Flush brake system

   STANDARD: When bleeder screw is opened, with pressure applied, flow must be clear with no evidence of contamination.

4. R & R brake hoses

   STANDARD: Hose must be routed according to manufacturer's specifications, no leaks will be visible, and no air will be expelled from the bleeder screw on the wheel nearest the new hose when brake pressure is applied.

5. R & R brake line

STANDARD: Line must be routed according to manufacturer's specifications, no leaks will be visible, and no air will be expelled from the bleeder screw on the wheel nearest the line when brake pressure is applied.

6. Adjust brake shoes

STANDARD: When brakes are applied, vehicle must not pull to right or left and brakes must not lock on any one wheel before the other wheels lock.

7. Free-up parking brake cable and linkage

STANDARD: When applied and released, cable and linkage must not bind.

8. Adjust parking brake linkage

STANDARD: When applied, parking brake must hold vehicle on a 10 degree incline. When released, brakes must not drag.

9. R & R parking brake cable and linkage

STANDARD: Cable and linkage must be installed according to manufacturer's procedures. When applied, cable and linkage must not bind, and the parking brake must hold vehicle on a 10 degree incline. When released, brake must not drag.

10. R & R parking brake external band

STANDARD: External band must be installed according to manufacturer's procedure. When applied, brake must hold vehicle on a 10 degree incline, and when released, band must not drag on drum.

11. R & R brake shoes

    STANDARD: Shoes must be installed according to manufacturer's procedures. Shoes must not drag, wheel lug nuts must be torqued to manufacturer's specifications.

12. R & R self-adjusters

    STANDARD: Self-adjuster mechanism must be installed according to manufacturer's procedures. Wheel lug nuts must be torqued to manufacturer's specifications.

13. R & R wheel cylinder

    STANDARD: When pressure is applied and bleeder screw is opened, no air will be expelled. When brakes are applied, with wheel elevated, brake must lock wheel. Wheel lug nuts must be torqued to manufacturer's specifications.

14. Rebuild wheel cylinder

    STANDARD: Wheel cylinder must not leak.

15. Cam grind brake shoe

    STANDARD: Shoes must be ground to the arc specified for the drum the shoe must fit.

16. Grind (turn) brake drum

    STANDARD: All wear marks must be removed, drum thickness must equal or exceed manufacturer's specifications.

17. Recondition backing plate

    STANDARD: Shoe must contact all platforms and hardware must be torqued to manufacturer's specifications.

18. R & R disc brake rotor

    STANDARD: Rotor assembly must be installed according to manufacturer's procedures. All attachment hardware must be torqued to manufacturer's specifications.

19. Reface disc brake rotor

    STANDARD: Rotor must be true to center on both sides, thickness must be equal to or greater than manufacturer's specifications.

20. R & R caliper assembly

    STANDARD: Caliper assembly must be installed according to manufacturer's procedures. All attachment hardware and the brake hose must be torqued to manufacturer's specifications. When pressure is applied and the bleeder screw is opened, no air will be expelled.

21. Rebuild caliper

    STANDARD: Caliper cylinder will operate with no leaks.

22. R & R master cylinder

    STANDARD: Master cylinder must be installed according to manufacturer's procedures. Pedal must be firm and connections must not leak.

23. Rebuild master cylinder

    STANDARD: Master cylinder must be rebuilt according to manufacturer's procedures.

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24. R & R hydraulic power brake unit

STANDARD: Unit must be installed according to manufacturer's procedures, all attachment hardware must be torqued to manufacturer's specifications. Pedal must be firm with no vacuum or fluid leaks.

25. R & R hydro-brake booster unit

STANDARD: Unit must be installed according to manufacturer's procedures, all attachment hardware must be torqued to manufacturer's specifications. Pedal must be firm with no fluid leaks.

26. Bleed brake system

STANDARD: When pressure is applied and any bleeder screw is opened, no air will be expelled. Pedal must be firm.

27. R & R proportioning meter (combination valve)

STANDARD: Unit must be installed according to manufacturer's procedures. Hydraulic lines must not leak.

28. Check brake anti-lock system

STANDARD: Any deviation from manufacturer's specifications must be detected. (When brakes are firmly depressed, brakes must not lock.)

29. Replace defective components in brake anti-lock system

STANDARD: Components must be installed according to manufacturer's procedures.

HEATING AND AIR CONDITIONING SPECIALIST

HEATING AND AIR CONDITIONING

1. Inspect control cables

   STANDARD: Any binding, disconnected or out-of-adjustment cables must be detected.

2. Test electrical control circuits

   STANDARD: Any resistance or voltage readings which deviate from manufacturer's specifications must be detected.

3. R & R compressor belts

   STANDARD: Belts must be aligned and tension set to manufacturer's specifications. All attachment hardware must be torqued to manufacturer's specifications.

4. Test vacuum components

   STANDARD: Any vacuum leaks or binding must be detected.

5. R & R vacuum components

   STANDARD: Components must be installed according to manufacturer's procedures.

6 Test air conditioning thermal switch(s)

   STANDARD: All open or out of tolerance thermal switches must be detected.

7. Test blower motor

   STANDARD: Current draw in excess of manufacturer's specifications must be detected.

8. R & R blower motor

   STANDARD: Blower motor must be installed according to manufacturer's procedures.

9. Test thermostatic clutch switch

   STANDARD: Any deviation from manufacturer's specified operating temperature must be detected.

10. R & R thermostatic clutch switch

    STANDARD: Switch must be installed according to manufacturer's procedures.

11. Inspect air conditioning magnetic clutch

    STANDARD: Any slipping, overheating or bearing noise must be detected.

12. R & R air conditioning magnetic clutch assembly (piston type)

    STANDARD: Clutch assembly must be installed according to manufacturer's procedures.

13. Inspect clutch and pulley assembly

    STANDARD: Same as 11.

14. R & R clutch and hub assembly (rotary type)

    STANDARD: Same as 12.

15. Test air conditioner charge

    STANDARD: A high-low ratio outside of manufacturer's specifications must be detected.

16. Charge system using pound cans

    STANDARD: The high-low ratio must be within manufacturer's specifications.

17. Charge system using bulk source

    STANDARD: Same as 16.

18. Perform leak test with halide torch

    STANDARD: All freon leaks must be detected.

19. Perform leak test with electronic tester

    STANDARD: Same as 18.

20. R & R refrigerant lines

    STANDARD: Connections must not leak and the lines must be routed according to manufacturer's specifications.

21. Fabricate refigerant lines

    STANDARD: Connections must not leak, hose stock must be equivalent to original equipment.

22. R & R compressor seals

    STANDARD: Seals must be installed according to manufacturer's procedures, seal must not leak when unit is operated. Connections must not leak, belts must be aligned and mounting hardware must be torqued to manufacturer's specifications.

23. Check compressor oil

    STANDARD: An oil level deviating from manufacturer's specifications must be detected.

24. Inspect dryer

    STANDARD: Any oil leaks, in-barrel icing or excessive barrel temperature differential must be detected.

25. R & R dryer in air conditioning unit

    STANDARD: Dryer must be installed according to manufacturer's procedures, freon must not leak.

26. R & R condensor in air conditioning unit

    STANDARD: Condensor must be installed according to manufacturer's procedures, freon must not leak.

27. R & R evaporator

    STANDARD: Evaporator must be installed according to manufacturer's procedures, freon must not leak.

28. R & R measured orifice valve (expansion valve)

    STANDARD: Unit must not leak freon or oil, valve must be installed according to manufacturer's procedures.

29. Test throttle - suctioning valve

    STANDARD: Any deviation from manufacturer's specifications must be detected.

30. R & R throttle - suctioning valve

    STANDARD: Valve must be installed according to manufacturer's procedures, connections must not leak.

31. Test compressor reed plates

    STANDARD: Any internal leakage must be detected.

32. R & R compressor reed plates

    STANDARD: Reed plates must be installed according to manufacturer's procedures without internal vacuum or external freon leaks.

33. R & R compressor

STANDARD: Connections must not leak, lines must be routed according to manufacturer's specifications, belts must be aligned and mounting hardware torqued to specifications.

34. Rebuild rotary compressor (swash-plate)

STANDARD: Unit must be rebuilt to meet manufacturer's specifications.

35. R & R heater core

STANDARD: Heater core must be installed according to manufacturer's procedures, coolant must not leak.

36. Install air conditioner system

STANDARD: Air conditioning system must be installed according to manufacturer's procedures, primary duct outlet temperature must be within manufacturer's specifications.

COOLING SYSTEM

1. Determine cause of overheating

STANDARD: Any coolant loss or restrictions, engine timing outside of specifications, air restriction, fuel mixture outside of manufacturer's specifications, exhaust restriction, broken or loose belts or improper electric fan operation must be detected.

2. Test thermal sensing switch .77

STANDARD: A switch which opens or closes outside of manufacturer's specifications must be detected.

3. R & R thermal sensing switch

STANDARD: Unit must be installed according to manufacturer's procedures, coolant must not leak.

4. R & R drive belts

STANDARD: Belts must be aligned and tensioned to manufacturer's specifications; attachment hardware must be torqued to manufacturer's specifications.

5. Test coolant freezing point

STANDARD: Reading must be noted.

6. Install antifreeze

STANDARD: Water to antifreeze ratio must be appropriate for local temperature conditions.

7. Inspect water hoses

STANDARD: All cracked, soft, or worn hoses must be detected.

8. Check variable speed fan clutch

STANDARD: Lock up, bearing wear, or excessive slippage must be detected.

9. R & R variable speed fan clutch

STANDARD: Unit must be installed according to manufacturer's procedures, attachment hardware must be torqued to manufacturer's specifications.

10. Chemically clean cooling system .78

STANDARD: System must be cleaned according to manufacturer's procedures.

11. R & R thermostat

STANDARD: Unit must be installed according to manufacturer's procedures, coolant must not leak.

12. Test thermostat

STANDARD: Opening temperature deviating from temperature stamped on thermostat must be detected.

13. Test coolant pressure caps

STANDARD: A cap opening at a different pressure than that stamped on the cap must be detected.

14. Pressure test cooling system

STANDARD: Any pressure drop must be detected.

15. R & R heater hoses

STANDARD: Hose connections must not leak, hoses must be installed and routed according to manufacturer's procedures.

16. R & R radiator hoses

STANDARD: Same as 15.

17. R & R radiator

STANDARD: Unit must be installed according to manufacturer's procedures and hoses must not leak.

18. Rebuild blower assembly on air-cooled engines

STANDARD: Rebuilt unit must meet manufacturer's specifications.

IGNITION SYSTEM

1. Test ignition system using engine analyzer

   STANDARD: Any meter reading, digital readout or scope display deviating from manufacturer's specifications must be detected.

2. Test point dwell

   STANDARD: Point dwell deviating from manufacturer's specifications must be detected.

3. R & R distributor cap

   STANDARD: Distributor cap notch must mate with housing slot, retaining clips or screws must be secured and all wires securely connected to the cap.

4. R & R distributor rotor

   STANDARD: Distributor rotor must be in aligning notch, distriutor cap notch must mate with housing slot and the retaining clips or screws must be secured.

5. Inspect distributor for worn parts

   STANARD: All parts worn beyond manufacturer's specifications must be detected.

6. R & R points

   STANDARD: Point dwell must be within manufacturer's specifications.

7. R & R condensor .80

STANDARD: All connections must be secure, and condensor positioned according to manufacturer's specifications.

8. Test condensor

STANDARD: Any deviation from manufacturer's specifications must be detected.

9. R & R distributor

STANDARD: Engine timing must be within manufacturer's specifications, distributor hold down bolt must be tightened to manufacturer's specifications and all wires must be securely connected to the distributor cap.

10. Rebuild distributor

STANDARD: Dwell variation and timing advance must be within manufacturer's specifications.

11. Test control unit (electronic)

STANDARD: Any deviation from manufacturer's specifications must be detected.

12. R & R control unit (electronic)

STANDARD: Control unit must be installed according to manufacturer's procedures. All attachment hardware must be tightened to manufacturer's specifications.

13. Test pickup coil (electronic)

STANDARD: Any deviation from manufacturer's specifications must be detected.

14. R & R pickup coil (electronic)

    STANDARD: Pickup coil must be installed according to manufacturer's procedure. All attachment hardware must be tightened to manufacturer's specifications.

15. Test automatic spark advance mechanism

    STANDARD: Any deviation from manufacturer's specifications must be detected.

16. R & R automatic spark advance mechanism

    STANDARD: All attachment hardware must be tightened to manufacturer's specifications. Spark advance must be within manufacturer's specifications.

17. Adjust point dwell

    STANDARD: Dwell must be within manufacturer's specified range.

18. Test ignition timing

    STANDARD: Any deviation from manufacturer's specifications must be detected.

19. Adjust ignition timing

    STANDARD: Timing must be adjusted using manufacturer's procedures and set to manufacturer's specifications.

20. Test ignition coil

    STANDARD: Any deviation from manufacturer's specifications must be detected.

21. Test primary circuit resistance

    STANDARD: Resistance outside of manufacturer's specifications must be detected.

22. Test secondary circuit continuity

    STANDARD: Resistance outside of manufacturer's specifications must be detected.

23. Test spark plug wires resistance

    STANDARD: Resistance outside of manufacturer's specifications must be detected.

24. R & R spark plug wires

    STANDARD: Wires must be routed according to manufacturer's procedures, securely connected to the distributor cap and securely connected to the spark splugs.

25. R & R spark plugs

    STANDARD: Plugs must be gapped and torqued to manufacturer's specifications.

26. Clean spark plugs

    STANDARD: All carbon must be removed from the electrode insulator and shell.

27. Gap spark plugs

    STANDARD: Gap must be set to manufacturer's specifications.

FUEL SYSTEM

1. Test carburetor adjustment using combustion analyzer

    STANDARD: A carburetor mixture deviating from manufacturer's specifications must be detected.

2. Test carburetor adjustment using infra-red tester

    STANDARD: Hydrocarbon and carbon monoxide levels exceeding manufacturer's specifications must be detected.

3. Test carburetor adjustment using propane enrichment apparatus.

   STANDARD: Idle speed variation outside of manufacturer's specifications must be detected.

4. Adjust carburetor idle mixture

   STANDARD: Carburetor idle mixture and exhaust emissons must be within manufacturer's specified range. All attachment hardware must be tightened to manufacturer's specifications with no fuel or vacuum leaks.

5. Adjust anti-stall device

   STANDARD: Anti-stall device must be adjusted to meet manufacturer's specifications.

6. Inspect carburetor linkage for binding and worn parts

   STANDARD: All binding and/or worn parts must be detected.

7. Check carburetor for vacuum leaks

   STANDARD: All carburetor mounting and/or assembly leaks must be detected.

8. R & R carburetor air cleaner

   STANDARD: Air cleaner must be installed according to manufacturer's procedures, all vacuum hoses and electrical connections must be secure.

9. Check carburetor air cleaner element

   STANDARD: Any restriction (dirt) which decreases air flow beyond manufacturer's specifications must be detected.

10. Clean carburetor air cleaner

    STANDARD: Air cleaner unit must be cleaned according to manufacturer's specifications, unit cannot be damaged. Air flow must not be restricted beyond manufacturer's specifications.

11. Clean automatic choke

    STANDARD: Choke must operate according to manufacturer's specifications.

12. Adjust automatic choke

    STANDARD: Same as 11

13. Free up manifold heat riser valve

    STANDARD: Heat riser valve must not bind when operating.

14. R & R manifold heat riser valve

    STANDARD: Heat riser valve must be installed according to manufacturer's procedures and exhaust must not leak in the gasket areas.

15. Clean heat riser passages

    STANDARD: Heat riser passages must be cleaned according to manufacturer's specifications with no exhaust or vacuum leaks in the repair area.

16. Adjust float

    STANDARD: Float level and drop must meet manufacturer's specifications. All attachment hardware must be tightened to manufacturer's specifications with no fuel or vacuum leaks.

17. Adjust carburetor metering rods

    STANDARD: Metering rod adjustment must meet manufacturer's specifications.

18. R & R carburetor metering jets

STANDARD: Metering jets must be installed according to manufacturer's procedures. All attachment hardware must be tightened to manufacturer's specifications with no fuel or vacuum leaks.

19. R & R carburetor

STANDARD: Carburetor must be installed according to manufacturer's procedures. Linkage must not bind or stick. All attachment hardware must be tightened to manufacturer's specifications with no fuel vacuum leaks.

20. Rebuild carburetor

STANDARD: Carburetor must be rebuilt to meet manufacturer's specifications for flow and mixture.

21. R & R fuel filter unit

STANDARD: Fuel line connections must not leak. Unit must not be installed backward (if appropriate).

22. Test fuel pump

STANDARD: Pressure, volume or vacuum readings deviating from manufacturer's specifications must be detected.

23. R & R fuel pump

STANDARD: There must be no fuel or oil leaks in repair area, all electrical connections must be secure. All attachment hardware must be torqued to manufacturer's specifications.

24. Test fuel injection system

    STANDARD: Any deviation of fuel flow, timing or electrical circuit continuity from manufacturer's specifications must be detected.

25. R & R electrical fuel injection computer

    STANDARD: Installation must follow manufacturer's procedures, all electrical connections must be secure.

26. Test wiring harness of electronic fuel injection system

    STANDARD: Any open, shorted, or out of tolerance circuits must be detected.

27. R & R wiring harness of electronic fuel injection system

    STANDARD: Same as 25.

28. R & R fuel injection nozzle

    STANDARD: Installation must follow manufacturer's procedures, all connections must be tightened according to manufacturer's specifications, fuel must not leak.

29. Rebuild fuel injector nozzle

    STANDARD: Fuel flow must meet manufacturer's specifications.

30. R & R fuel injection pump

    STANDARD: Installation must follow manufacturer's procedures, all electrical connections must be secure, all attachment hardware must be tightened to manufacturer's specifications, fuel must not leak.

31. Rebuild fuel injection pump

STANDARD: Pump must be rebuilt to manufacturer's specifications.

32. Check waste gate adjustment

STANDARD: Any deviation from manufacturer's specifications must be detected.

33. Adjust waste gate

STANDARD: Waste gate must open at manufacturer's specified boost.

34. R & R turbocharger

STANDARD: Unit must be mounted and torqued according to manufacturer's specification, there must not be oil, vacuum or pressure leaks.

35. Rebuild turbocharger

STANDARD: Unit must be rebuilt to manufacturer's specifications.

36. R & R fuel lines

STANDARD: Lines must be routed properly and not leak.

37. R & R gas tank

STANDARD: Fuel connections must not leak, all electrical connections must be secure and tank mounting bolts must be torqued to manufacturer's specifications.

38. R & R fuel level sending unit

STANDARD: Same as 37

EMISSIONS CONTROL SYSTEM

1. Test emission control system using propane enrichment apparatus.

   STANDARD: Idle speed changes outside of manufacturer's specifications must be detected.

2. R & R vacuum hoses

   STANDARD: Hoses must be installed and routed according to manufacturer's specifications.

3. Test P.C.V. System

   STANDARD: Any deviation from manufacturer's operating specifications must be detected.

4. R & R P.C.V. valve

   STANDARD: Valve(s) must be installed according to manufacturer's procedures.

5. R & R P.C.V. valve hose(s)

   STANDARD: Hose(s) must be installed according to manufacturer's procedures.

6. Test vacuum advance/retard device

   STANDARD: Same as 3.

7. R & R vacuum advance/retard device

   STANDARD: Unit must be installed according to manufacturer's procedures.

8. Test electrical advance/retard device

   STANDARD: Same as 3.

9. Check idle solenoid

   STANDARD: Same as 3.

10. R & R idle solenoid

    STANDARD: Same as 7.

11. R & R deceleration valve

    STANDARD: Same as 7.

12. Test thermostatic air cleaner

    STANDARD: Same as 3.

13. Adjust thermostatic air cleaner

    STANDARD: Unit must operate according to manufacturer's specifications.

14. R & R thermostatic air cleaner

    STANDARD: Unit must be installed according to manufacturer's procedures.

15. Check exhaust gas recirculation valve operation

    STANDARD: Any deviation from manufacturer's operating specifications must be detected.

16. R & R exhaust gas recirculation valve

    STANDARD: Same as 14.

17. Check air injection system

    STANDARD: Same as 15.

18. R & R air pump

    STANDARD: Same as 14.

19. R & R diverter and anti-backfire valve

    STANDARD: Same as 14.

20. Test fuel evaporation system

    STANDARD: Same as 15.

21. R & R closed system charcoal canister filter

    STANDARD: Sames as 14.

22. Test back pressure of exhaust system

    STANDARD: Same as 15.

23. R & R catalytic converter

    STANDARD: Same as 14.

24. R & R beads in catalytic converter

    STANDARD: Same as 14.

EXHAUST SYSTEM

1. Check exhaust system for leaks and restrictions

   STANDARD: All leaks and restrictions must be detected.

2. R & R exhaust system supports

   STANDARD: Supports must be installed with sufficient clearances and attached securely, according to manufacturer's procedures

3. R & R converter beads

   STANDARD: Converter beads must be changed according to manufacturer's procedures.

4. R & R catalytic converter

   STANDARD: Unit must be installed according to manufacturer's procedures and must not leak.

5. R & R muffler

   STANDARD: Unit must be installed according to manufacturer's procedures and must not leak.

6. R & R exhaust pipe

   STANDARD: Same as 5

7. R & R tail pipe

   STANDARD: Same as 5

8. R & R exhaust manifold

   STANDARD: Unit must be installed according to manufacturer's procedures and all attachment hardware must be torqued to manufacturer's specifications.

AUTOMATIC TRANSMISSION SPECIALIST

1. Pressure test transmission in car

   STANDARD: Pressure readings deviating from manufacturer's specifications must be detected.

2. Stall test automatic transmission in car

   STANDARD: Pressure readings deviating from manufacturer's specifications at shift points must be detected. Transmission slippage exceeding manufacturer's specification must be detected.

3. Clean transmission oil strainer

   STANDARD: All foreign matter must be removed from the screen, transmission pan gasket must not leak after replacement.

4. R & R transmission filter

   STANDARD: Transmission pan gasket must not leak after replacement.

5. Adjust automatic transmission shift linkage

   STANDARD: Transmission must lock in park and shift quadrant indicator must be at PARK when transmission locked in park.

6. Test vacuum shift modulator

   STANDARD: Any deviation from manufacturer's vacuum leak down specifications must be detected.

7. R & R vacuum shift modulator

   STANDARD: Any deviation from manufacturer's shift point specifications must be detected.

8. Adjust bands

STANDARD: Band adjustment must be within manufacturer's specifications. Transmission slippage exceeding manufacturer's specifications must be detected.

9. R & R transmission governor

STANDARD: All valves must move freely in bore without binding.

10. Clean transmission governor

STANDARD: Any deviation from manufacturer's specifications for transmission upshift speeds must be detected.

11. Clean transmission valve body

STANDARD: All valves must move freely in bores without binding, all varnish must be removed, valve edges must not be rounded from cleaning.

12. R & R automatic transmission with convertor assembly

STANDARD: All attachment hardware must be torqued to manufacturer's specifications, any deviation from manufacturer's shift points must be detected, and transmission cooler lines must not leak.

13. R & R automatic transmission without convertor assembly

STANDARD: Same as Standard 12

14. Rebuild automatic transmission assembly

    STANDARD: Any deviation from manufacturer's pressure test specifications for in-vehicle tests must be detected, all attachment hardware must be torqued to manufacturer's specifications, any deviation from manufacturer's shift points must be detected and no transmission leaks can be observed.

15. Measure convertor turbine end play

    STANDARD: Any deviation of convertor turbine end play from manufacturer's specifications must be detected.

16. Air pressure test transmission on bench

    STANDARD: All leaks, and any deviation of clutch application shift pressure from manufacturer's specifications and leaks must be detected.

17. Pressure flush convertor assembly

    STANDARD: Convertor assembly must be flushed until no residue is visible in sight glass.

18. Pressure flush automatic transmission cooler assembly

    STANDARD: Cooler assembly must be flushed until no residue is visible in sight glass.

19. R & R torque convertor

    STANDARD: Torque multiplication must be felt below 30 MPH.

20. R & R extension housing seal and bushing

    STANDARD: The housing seal areas must not leak and drive shaft must be in phase.

21. Splice cooler lines

    STANDARD: No leaks can be visible after driving vehicle 15 minutes, lines must clear other parts at potential wear spots.

ELECTRICAL SYSTEM SPECIALIST

ELECTRICAL SYSTEM

1. Inspect battery electrolyte level

   STANDARD: Any deviation from manufacturer's specified level must be detected.

2. Test battery with hydrometer

   STANDARD: Any cell with a specific gravity reading less than 1.220 must be detected.

3. Test battery for surface leakage

   STANDARD: Any surface leakage must be detected.

4. Test battery voltage

   STANDARD: A low voltage condition must be detected.

5. Test battery for capacity (load)

   STANDARD: Any deviation from manufacturer's specifications must be detected.

6. Clean battery, posts, and cable connections

   STANDARD: Battery terminal and cable connections must be free of corrosion and foreign material.

7. Measure ground system resistance

   STANDARD: Any ground system resistance must be detected.

8. R & R battery cables

   STANDARD: Cables must be securely attached to proper terminals.

9. Charge battery

   STANDARD: Charger cables must be attached to the proper terminals, charged battery voltage and specific gravity must be within manufacturer's specifications.

10. Test charging system output

STANDARD: Any deviation from manufacturer's specifications for output must be detected.

11. Test generator output

STANDARD: Same as 10.

12. Test alternator output

STANDARD: Any deviation from manufacturer's specifications for output must be detected.

13. R & R generator or alternator

STANDARD: All attachment hardware must be torqued to manufacturer's specifications, all electrical connections secure, all belts aligned and set to manufacturer's tension specifications.

14. Rebuild generator

STANDARD: Generator output must be within manufacturer's specified range and tolerances must be within manufacturer's specified range.

15. Rebuild alternator

STANDARD: Alternator output must be within manufacturer's specified range and tolerances must be within manufacturer's specified range.

16. R & R charging system regulator

STANDARD: All electrical connections must be secure, charging system must operate according to manufacturer's specifications.

17. Test starter control circuit

STANDARD: Resistance outside of manufacturer's specifications must be detected.

18. Test starter

STANDARD: Current draw which exceeds manufacturer's specifications must be detected.

19. R & R starter solenoid

STANDARD: Unit must be installed according to manufacturer's procedures, wires must be properly routed and electrical connections must be secure.

20. Test electrical motors

STANDARD: Current draw and RPM outside of manufacturer's specifications must be detected.

21. R & R starter

STANDARD: Unit must be installed according to manufacturer's procedures, wires must be properly routed and electrical connections must be secure.

22. Rebuild starter

STANDARD: Rebuilt starter must meet manufacturer's specifications.

23. Test switches

STANDARD: Resistance outside of manufacturer's specifications must be detected.

24. R & R switches

STANDARD: Switches must be installed according to manufacturer's specifications and all connections must be secure.

25. Test fuses .97

STANDARD: Open fuses must be detected.

26. R & R fuses

STANDARD: Fuses must be installed according to manufacturer's procedures.

27. Test circuit breakers

STANDARD: Circuit breakers opening outside of manufacturer's specifications must be detected.

28. R & R circuit breakers

STANDARD: Circuit breakers must be installed according to manufacturer's procedures, all connections must be secure.

29. R & R fuse block assembly

STANDARD: Fuse block assembly must be installed according to manufacturer's procedures.

30. Inspect lighting system for faulty bulbs

STANDARD: All faulty bulbs must be detected.

31. R & R light bulbs

STANDARD: Bulbs must be installed according to manufacturer's procedures.

32. R & R bulb sockets

STANDARD: Sockets must be installed according to manufacturer's procedure and connections must be secure.

33. Adjust headlights

STANDARD: Headlights' aim must meet state inspection standards (when applicable) or manufacturer's specifications.

34. Test parking light circuit

STANDARD: Circuit resistance outside of manufacturer's specifications must be detected.

35. R & R dimmer switch

STANDARD: Dimmer switch must be installed according to manufacturer's procedures.

36. Test turn signal circuit

STANDARD: Same as 34.

37. R & R turn signal switch

STANDARD: Turn signal switch must be installed according to manufacturer's procedures.

38. Adjust backup light switch

STANDARD: Backup lights must go on only when vehicle is in reverse. (If applicable, vehicle must start only in neutral or park.)

39. R & R backup light switch

STANDARD: Backup light switch must be installed according to manufacturer's specifications. (If applicable, vehicle must start only in neutral or park.)

40. Adjust stop light switch

STANDARD: Switch must be adjusted according to manufacturer's specifications.

41. R & R stop light switch

STANDARD: Stop light switch must be installed according to manufacturer's specifications.

42. Check horn circuit

STANDARD: Circuit resistance outside of manufacturer's specifications must be detected.

43. Test horn relay

STANDARD: Operation outside of manufacturer's specifications must be detected.

44. R & R horn relay

STANDARD: Relay must be installed according to manufacturer's procedures.

45. Test windshield wiper circuit

STANDARD: Same as 42.

46. R & R windshield wiper motor

STANDARD: Unit must be installed according to manufacturer's procedures.

47. R & R windshield washer motor

STANDARD: Same as 46.

48. Test constant voltage regulator

STANDARD: Same as 43.

49. R & R constant voltage regulator

STANDARD: Same as 46.

50. Test instrument gauges

STANDARD: Operation outside of manufacturer's specifications must be detected.

51. R & R instrument gauges

STANDARD: Same as 46.

52. Test sending units

STANDARD: Same as 50.

53. R & R sending units

STANDARD: Unit must be installed according to manufacturer's procedures.

54. Test warning lamps

STANDARD: Operation outside of manufacturer's specifications must be detected.

55. R & R warning lamps

STANDARD: Unit must be installed according to manufacturer's procedures.

56. Test instrument gauges

STANDARD: Same as 54.

57. R & R instrument gauges

STANDARD: Same as 55.

ELECTRICAL ACCESSORIES

1. Test cruise control unit

STANDARD: Operation outside of manufacturer's specifications must be detected.

2. R & R cruise control components

STANDARD: Components must be installed according to manufacturer's procedures.

3. Test automatic alarm system

STANDARD: Same as 1.

4. R & R automatic alarm system components

STANDARD: Same as 2.

5. Test radio power circuit

STANDARD: Circuit resistance outside of manufacturer's specifications must be detected.

6. Inspect radio speaker

   STANDARD: All cracks or separation must be detected.

7. R & R radio speaker

   STANDARD: Same as 2.

8. Test radio antenna

   STANDARD: Resistance outside of manufacturer's specifications must be detected.

9. R & R radio antenna

   STANDARD: Same as 2.

10. Trim radio antenna

    STANDARD: Moving trimmer from proper adjusment will decrease radio volume.

11. R & R power antenna motor

    STANDARD: Same as 2.

12. R & R power window motors

    STANDARD: Same as 2.

13. R & R power seat motors

    STANDARD: Same as 2.

14. Test cigarette lighter circuit

    STANDARD: Resistance outside of manufacturer's specifications must be detected.

15. R & R cigarette lighter receptacle

    STANDARD: Unit must be installed according to manufacturer's procedures.

MANUAL TRANSMISSION AND REAR AXLE SPECIALIST

MANUAL TRANSMISSION

1. Adjust shift linkage

   STANDARD: When shifted, the gear shift lever must not bind, and must have the amount of travel required for complete gear engagement.

2. Adjust manual clutch

   STANDARD: The clutch pedal must have observable free pedal, adjusted within manufacturer's specifications.

3. Adjust hydraulic clutch free travel

   STANDARD: The clutch pedal and fork clearance must be adjusted within manufacturer's specifications, with no slippage or grating when gears are shifted.

4. R & R extension housing seal and bushing

   STANDARD: The housing seal areas must not leak and drive shaft must be in phase.

5. R & R manual transmission

   STANDARD: The transmission linkage must not bind, lubricant must be at full level and all attachment hardware tightened to manufacturer's specifications.

6. Rebuild manual transmission

   STANDARD: When vehicle is driven, there must be no gear or bearing noise, transmission must not jump out of gear or leak.

7. R & R pressure plate assembly

   STANDARD: When vehicle is driven gears must engage and disengage smoothly, clutch must not slip or chatter.

8. R & R clutch release bearing

   STANDARD: When the vehicle clutch is depressed with the engine running, the transmission must disengage.

9. R & R clutch release fork

   STANDARD: When vehicle is driven, gears must engage and disengage smoothly.

10. R & R pilot bearing

    STANDARD: When the engine is running, bearing must not squeal.

11. R & R hydraulic clutch slave cylinder

    STANDARD: Slave cylinder must not leak, first gear must engage and disengage smoothly.

12. Rebuild hydraulic clutch slave cylinder

    STANDARD: Same as 11.

13. R & R hydraulic clutch master cylinder

    STANDARD: Master cylinder must not leak, first gear must engage and disengage smoothly.

14. Rebuild hydraulic clutch master cylinder

    STANDARD: Same as 13.

15. Measure flywheel runout

    STANDARD: Any deviation from manufacturer's specifications for flywheel runout must be detected.

16. Replace flywheel

STANDARD: All attachment hardware must be torqued to manufacturer's specifications. No vibration may be caused by flywheel imbalance.

17. Measure bellhousing runout

STANDARD: Any deviation from manufacturer's specifications for bellhousing runout must be detected.

DRIVE LINE

1. Inspect drive line for worn parts

STANDARD: All parts worn beyond manufacturer's specification must be detected.

2. Lubricate universal joint

STANDARD: Universal joint must move freely with no binding, grease must not show around seal.

3. R & R universal joint

STANDARD: Universal joint must move freely with no binding.

4. R & R trunion joint

STANDARD: Trunion pin must be centered, joint must move freely with no binding and grease must be added to manufacturer's specification.

5. Lubricate speedometer cable

STANDARD: Speedometer cable must not make a noise, and speedometer needle must not fluctuate when vehicle is operated at road speeds.

6. R & R speedometer cable

STANDARD: Same as Standard 5.

7. R & R speedometer drive gear

   STANDARD: The speedometer must register the appropriate speed relative to vehicle tire size.

8. R & R axle seal

   STANDARD: No leaks may be seen in the seal area after the vehicle has been driven 15 minutes.

9. R & R rear axle bearing

   STANDARD: New bearing must not make noise nor leak in the seal area.

10. Balance drive shaft (in car)

    STANDARD: The drive shaft must not vibrate at road speeds.

11. R & R transmission mount

    STANDARD: The tranmission must be aligned with the fixed mounts and all attachment hardware torqued to manufacturer's specifications.

12. Check drive line angles

    STANDARD: Any deviation from manufacturer's specifications for drive line angle must be detected.

13. R & R differential assembly (integral)

    STANDARD: Fluid level must be at full mark and all attachment hardware torqued to manufacturer's specifications.

14. R & R differential assembly (removable)

    STANDARD: Same as Standard 13.

15. Rebuild differential assembly (integral)

STANDARD: Fluid level must be at full mark; ring and pinion backlash must be within manufacturer's specifications, ring and pinion must not whine, bearing and other gear noise must be minimal throughout the vehicle's road speed range.

16. Rebuild differential assembly (removable)

STANDARD: Same as Standard 15.

17. R & R trans-axle assembly

STANDARD: Fluid levels must be at the full mark, wheels must be aligned within manufacturer's specifications, grease must not leak from seal areas after driving for 15 minutes.

18. Rebuild trans-axle assembly

STANDARD: Fluid levels must be at the full mark, wheels must be aligned within manufacturer's specifications, grease must not leak from seal areas after driving for 15 minutes, and trans-axle noise level must be within manufacturer's specifications.

19. R & R front-drive axle assemblies

STANDARD: All attachment hardware must be torqued to manufacturer's specifications, grease must not leak from seal areas after driving for 15 minutes.

20. Rebuild 4 wheel drive locking hubs

STANDARD: Hubs must engage and disengage freely without using unauthorized tools. (Pliers, etc.)

ENGINE REPAIR SPECIALIST

ENGINE MECHANICAL DIAGNOSIS

1. Test cylinder balance using engine analyzer

   STANDARD: A cylinder-to-cylinder deviation exceeding 10% must be detected.

2. Test cylinder leakage

   STANDARD: Leakage in excess of 20% must be detected.

3. Inspect engine for vacuum leaks

   STANDARD: All vacuum leaks must be detected.

4. Inspect engine for oil leaks

   STANDARD: All oil leaks must be detected.

5. Inspect to determine cause of overheating

   STANDARD: Any water passage restriction must be detected.

6. Inspect cooling system for source of coolant loss

   STANDARD: All cracks in the block or head(s), leaking core plugs and/or leaking gasket(s) must be detected.

7. Inspect valve train and guides for cause of malfunctions

   STANDARD: Any deviation from manufacturer's specifications must be detected.

8. Inspect engine for source of mechanical engine noise.

   STANDARD: All noises which may lead to engine malfunction must be isolated and the source identified.

ENGINE BLOCK

1. Clean engine

   STANDARD: All loose dirt and oil must be removed from the engine. No components can be damaged due to a lack of protection from the chemicals or heat.

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2. R & R core plugs

STANDARD: No core plug leaks can be detected after vehicle has reached operating temperature.

3. Test oil pump pressure

STANDARD: Any deviation from manufacturer's specifications must be detected.

4. Test oil pressure relief valve

STANDARD: Any deviation from manufacturer's specifications must be detected.

5. R & R motor mounts

STANDARD: All attachment hardware must be torqued to manufacturer's specifications.

6. R & R engine assembly

STANDARD: Engine must run in accordance with condition of engine. All linkage must be adjusted within manufacturer's specifications. All attachment hardware must be torqued to manufacturer's specifications.

7. R & R oil pan

STANDARD: No leaks can be detected at pan gasket after engine has been run at road speed. All attachment hardware must be torqued to manufacturer's specifications.

8. R & R rod bearing

STANDARD: Rod bearing shell and cap must be installed according to manufacturer's specifications. All attachment hardware must be torqued to manufacturer's specifications.

9. R & R piston .109

STANDARD: Piston must be installed according to manufacturer's specifications. All attachment hardware must be torqued to manufacturer's specifications.

10. R & R crankshaft

STANDARD: Crankshaft must be installed according to manufacturer's specifications. All attachment hardware must be torqued to manufacturer's specifications.

11. Inspect block for warp

STANDARD: Block warp exceeding manufacturer's specifications must be detected.

CYLINDER HEAD AND VALVE TRAIN

1. Inspect for rocker arm lubrication

STANDARD: Rocker arm lubrication levels outside of manufacturer's specifications must be detected.

2. R & R intake manifold

STANDARD: All attachment hardware must be torqued to manufacturer's specifications. Manifold must not leak vacuum, fluids or exhaust.

3. Test valve lifters

STANDARD: Bleed down times outside of manufacturer's specifications must be detected.

R & R cylinder head

STANDARD: All attachment hardware must be torqued according to manufacturer's specifications. The head gasket and exhaust manifold must not leak.

5. Inspect cylinder head for warp - cracks

   STANDARD: Head warp exceeding manufacturer's specifications must be detected. All cracks must be detected.

6. Rebuild cylinder head

   STANDARD: Rebuilt cylinder head and component tolerance must meet manufacturer's specifications.

7. R & R harmonic balancer

   STANDARD: All attachment hardware must be torqued to manufacturer's specifications. Front seal must not leak oil.

8. R & R timing chain or belt

   STANDARD: Timing chain or belt must be installed according to manufacturer's specifications. All attachment hardware must be torqued to manufacturer's specifications. Oil must not leak in repaired area.

9. R & R timing gear

   STANDARD: Timing gear must be installed according to manufacturer's specifications.

10. R & R camshaft

    STANDARD: Camshaft must be installed according to manufacturer's specifications.

11. R & R camshaft bearings

    STANDARD: Camshaft bearings must be installed according to manufacturer's specifications.

12. Adjust hydraulic valve lifters

STANDARD: Clearance must be adjusted according to manufacturer's procedures. Rocker arm covers must not leak.

13. Adjust mechanical valve lifters

STANDARD: Clearance must be adjusted according to manufacturer's procedures. Rocker arm covers must not leak.

GLOSSARY OF TERMS

1. CURRICULUM: All the objectives, content, and learning activities arranged in a learning sequence for a particular instructional area. An orderly arrangement of integrated subjects, activities, and experiences which students pursue for the attainment of a specific educational goal.
   From - What is Competency Based Vocational Education-CBVE?
   Maryland Vocational Curriculum Production Project, 1978.
2. COMPETENCY (Hands on) - Performance of a task to the level or degree specified in the performance standard for the task.
3. CRITERION REFERENCED MEASURE(S) - An exercise based on a performance objective for a task, and designed to measure attainment of that objective. (Also called performance test(s) or criterion referenced test)
4. GOAL - A statement of the intended outcome of participation in the training program.
5. LIVE WORK - The processing, assignment and student performance of the appropriate diagnosis, rebuild or replacement tasks on street legal vehicles.
6. MASTERY - (See competency - Hands on)
7. OBJECTIVE, PERFORMANCE - A written statement describing an intended outcome (competent task performance) in terms of student performance. (Also called "behavioral" objective or instructional objective) Mager
8. PERSONAL CHARACTERISTIC - Attributes which are not readily measurable, and are generally in the affective or cognitive domains.

9. SPECIALTY/SPECIALIST AREA(S) - Relates to one or more of the following eight areas: (1) Front End, (2) Brakes, (3) Heating and Air Conditioning, (4) Engine Tune-up (including emission control systems), (5) Automatic Transmission, (6) Electrical Systems, (8) Manual Transmission and Rear Axle, and (8) Engine Repair.

10. STANDARD - "...Something established for use as a rule or basis of comparison in measuring quantity, quality, value, etc..." Websters New World Dictionary (1973)

11. STANDARD PERFORMANCE - A written specification of the results of acceptable task performance.

12. STANDARD, PERSONAL - An attribute or characteristic of an individual which facilitates entry into and advancement in an occupation.

13. STANDARD, PROGRAM - A specific quality or desired characteristic of a training program designed to prepare individuals for employment.

14. TASK - A task (statement) describes a unit of work activity which has an identifiable beginning and ending point in its accomplishment, and consists of two or more observable steps.

15. TRAINING STATION - An area with appropriate tools and equipment, large enough to allow safety and competency development in task performance.

****

Must or shall is an imperative need, duty or requirement; an essential or indispensable item; mandatory.

Should is used to express a recommendation, not mandatory but attainment would increase program quality.

May or could expresses freedom to follow a suggested alternative.

APPENDIX

SURVEY OF NIASE CERTIFIED
AUTOMOBILE MECHANICS/TECHNICIANS
1980

FIRST MAILING

TOTAL INSTRUMENTS MAILED	150
USEABLE INSTRUMENTS RETURNED	39
NON-USEABLE INSTRUMENTS RETURNED	5
INSTRUMENTS RETURNED TO AMTEP DUE TO INCORRECT ADDRESS	9

SECOND MAILING (FOLLOW-UP)

TOTAL CARDS MAILED	97
USEABLE INSTRUMENTS RETURNED	8

THIRD MAILING

TOTAL INSTRUMENTS MAILED	100
USEABLE INSTRUMENTS RETURNED	29
NON-USEABLE INSTRUMENTS RETURNED	4
INSTRUMENTS RETURNED TO AMTEP DUE TO INCORRECT ADDRESS	14

RESPONSES/GRAND TOTAL

USEABLE INSTRUMENTS RETURNED	76
NON-USEABLE INSTRUMENTS RETURNED	9
TOTAL	85

****

TOTAL INSTRUMENTS MAILED	250
OVERALL RETURN RATE	34%
USEABLE RETURN RATE	30%

APPENDIX W

GLOSSARY OF TERMS

GLOSSARY OF TERMS

1. CURRICULUM: All the objectives, content, and learning activites arranged in a sequence for a particular instructional area. An orderly arrangement of integrated subjects, activities, and experiences which students pursue for the attainment of a specific education goal.
   From - What is Competency Based Vocational Education-CBVE?
   Maryland Vocational Curriculum Production Project, 1978.
2. COMPETENCY (Hands on) - Performance of a task to the level or degree specified in the performance standard for the task.
3. CRITERION REFERENCED MEASURE(S) - An exercise based on a performance objective for a task, and designed to measure attainment of that objective. (Also called performance test(s) or criterion referenced test)
4. GOAL - A statement of the intended outcome of participation in the training program.
5. LIVE WORK - The processing, assignment and student performance of the appropriate diagnosis, rebuild or replacement tasks on street legal vehicles.
6. MASTERY - (See Competency - Hands on)
7. OBJECTIVE, PERFORMANCE - A written statement describing an intended outcome (competent task performance) in terms of student performance. (Also called "behavioral" objective or instructional objective) R.F. Mager Associates, 13245 Rhoda Drive, Los Altos Hill, California.
8. PERSONAL CHARACTERISTIC - Attributes which are not readily measurable, and are generally in the affective or cognitive domains.

9. SPECIALTY/SPECIALIST AREA(S) - Relates to one or more of the following eight areas: (1) Front End, (2) Brakes, (3) Heating and Air Conditioning, (4) Engine Tune-up (including emission control systems), (5) Automatic Transmission, (6) Electrical Systems, (8) Manual Transmission and Rear Axle, and (8) Engine Repair.

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APPENDIX X

STAFF

B. E. Childers - Brief

Dr. Bob E. Childers is Executive Director of the Commission on Occupational Education Institutions of the Southern Association of Colleges and Schools located in Atlanta, Georgia. He has held that position since the creation of the Commission in 1969.

Born in Cleveland, Mississippi in 1930
Married Jo Ann Roberts of Memphis, Tennessee in 1953
Children - 3 boys and 1 girl

Degrees from Union University, Jackson, Tennessee - 1953
Memphis State University, Memphis, Tennessee - 1958
University of Tennessee, Knoxville, in Education 1964

Work experience includes:

Plant Supervisor, Electronics Technician in the U.S. Army, Electronics Instructor for the Radio Corporation of America and the U.S. Navy. High School Principal, Manpower Training Supervisor, State Director of Vocational-Technical Education for Tennessee, Regional Director of Adult, Vocational and Library Programs of Region IV of U.S. Office of Education, and has present positon as Executive Director of the Commission on Occupational Education Institutions.

Developmental activities include:

Implemented the accreditation program for vocational-technical schools for the Southern Association of Colleges and Schools, Commission on Occupational Education Institutions.
Developed and implemented the consortium of 18 states, Army, Navy, Air Force in development of catalogs of performance objectives, measures, and tasks (V-TECS)
Developed and validated performance, program, and personal standards for auto mechanic training (AMTEP)

Member of many professional organizations and author of a number of publications.

VITA

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Assistant Director
Vocational Technical Education
Consortium of States (V-TECS)

Instructional Media Specialist
Atlanta Area Technical School

Instructor
Automobile Mechanic Training and
Industrial Arts in Public School
Systems

Automobile Mechanic
Chevrolet and Buick Dealership

Electronic Technician
U.S. Navy

Graduate Assistant
Indiana University Audio-Visual Center

Education: Ed.S. and M.S. Ed.
Instructional Systems Technology
Indiana University, Bloomington, Indiana

B.S. Ed.
Industrial Arts Education
University of Nebraska
Lincoln, Nebraska